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ABSTRACT

This report addresses the issue of maintaining adequate controls within a streamlined or restructured financial affairs environment at an institution of higher education. It presents a new paradigm for control structures designed to more effectively meet administrators' needs--both in terms of cost and risk management. The first section: (1) describes the principles of streamlining, (2) examines the definition of control and its interpretation in practice and suggests a new interpretation, and (3) outlines several examples of institutions currently redefining their operations under these principles. The second section explains commonly used, traditional financial control systems and their frequent contributions in creating bureaucratic conditions of dubious efficiency or effectiveness. The third section examines a theoretical framework for control systems that emphasizes controlling exposure to risk with a minimum of interference in the business process. The fourth section explores the application of this framework to a number of university processes and considers the implications of the suggested control structures on effectiveness, cost, and process management. The fifth section defines critical success factors and offers guidelines for implementing streamlined, risk-sensitive control structures. (GLR)

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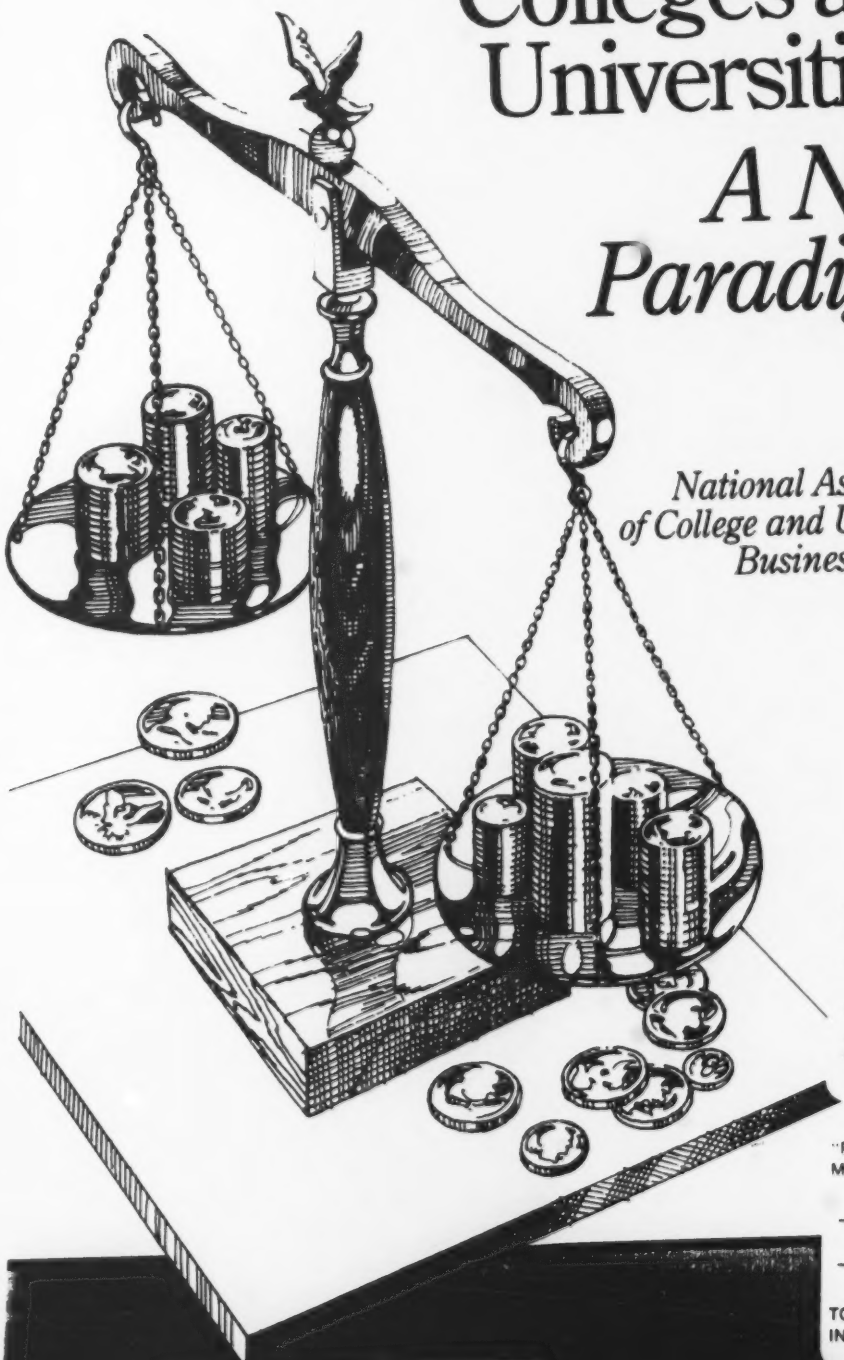

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Cost-Effective Control Systems for Colleges and Universities: A New Paradigm

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National Association of College and University Business Officers

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I. Introduction

Already in this decade, many colleges and universities have faced the difficult challenges of cutbacks–including layoffs, loss of grants, spending freezes, and budget reductions. Managing change within this environment raises new concerns in higher education administration. Lately, many institutions have been asking themselves, "When we respond to these economic pressures and implement streamlined processes, how do we ensure that we haven't cut back too far, particularly in areas with high financial risk?" In fact, many institutions are faced with balancing controls against costs–a challenge that requires finesse and dexterity.

This monograph addresses the issue of maintaining adequate controls within a streamlined or restructured financial affairs environment. *Cost-Effective Control Systems* presents a new paradigm for control structures that will more effectively meet administrators' needs–both in terms of cost and risk management. Before building a new model for control, the authors first lay the foundation by:

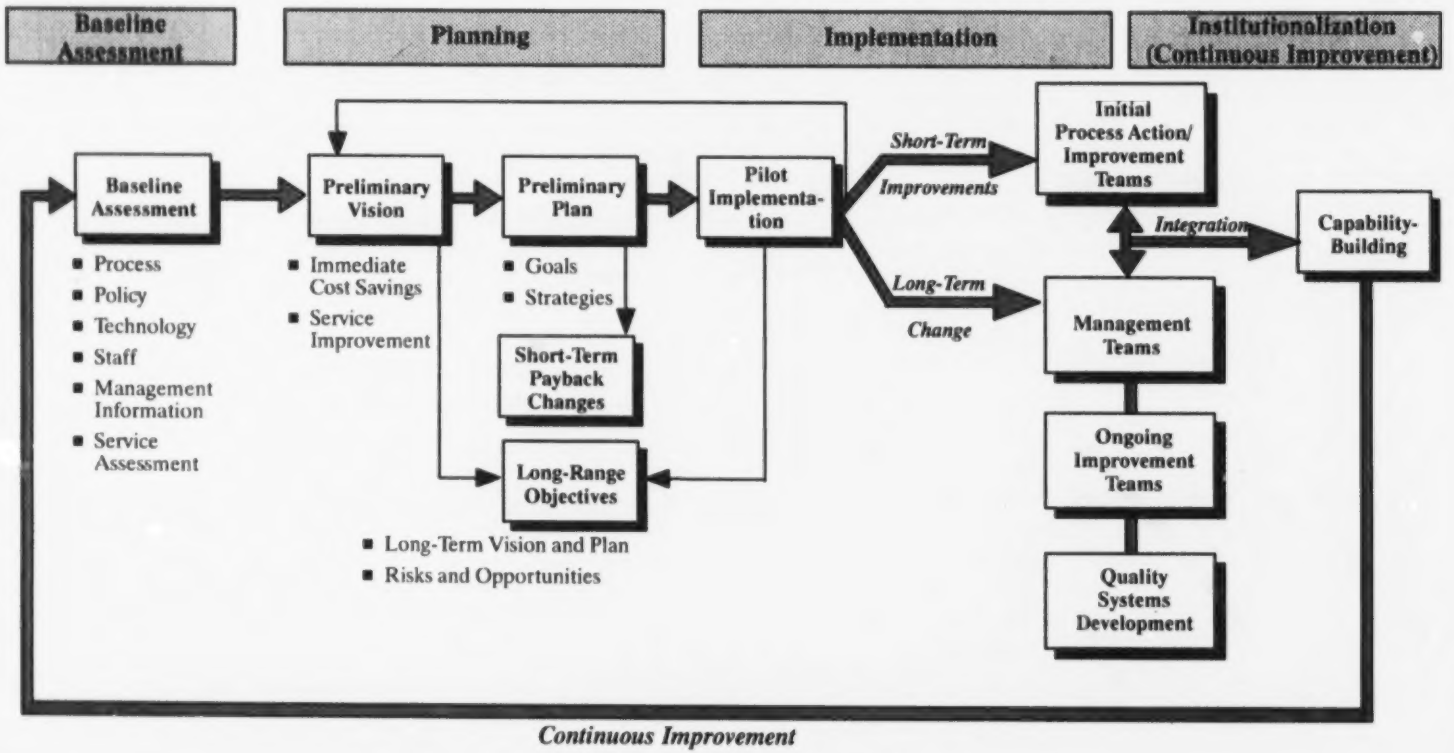
- describing the principles of streamlining;
- examining the definition of control and its interpretation in practice;
- suggesting a new interpretation; and then
- outlining several examples of institutions currently redefining their operations under these principles.

The Growth of Administrative Streamlining

Many institution administrators are studying the issue of administrative productivity by analyzing their current operations, reconsidering the business and processes in which they are engaged, and redesigning administrative functions to meet client service needs more efficiently and effectively. ("Client" here and throughout the paper refers to any person who receives service from an administrative process; the same definition applies to the term "customer.") This process may be simply stated as administrative streamlining. Administrative streamlining/restructuring efforts, such as Just-in-Time (JIT) and Total Quality Management (TQM), share several fundamental, common steps. Figure 1 illustrates these steps, which are also described below.[1]

1) After management identifies an area or process for attention, an employee "improvement team" works together to create and understand a **baseline** of the current situation. To create this "as-is" picture, the team first defines the process (inputs, outputs, performance characteristics) and then gathers quantitative data to measure the current performance of the system. This baseline serves two purposes: first, utilizing hard data, it objectively

FIGURE 1
Common Phases of Quality Management Improvement Program



highlights problem areas; second, it provides a standard against which future progress can be measured.

2) The employee team then goes back to basics in a **planning** phase to determine what their *clients* really need and expect from the selected area or process. The purpose of this phase is to align the outputs of related processes with the expectations of both internal and external customers (an internal customer might be another university department or staff member, while external customers might include prospective students, the public, or granting agencies). The critical first step in this phase is defining "where you want to go"–developing, in concert with management, a strategic vision. Customer needs and expectations provide the foundation for the vision. Once quality service is defined from the client's perspective, the gaps between the current processes and the client needs are evaluated. Using techniques such as brainstorming, the team seeks to identify all potential causes of unsatisfactory variation, or other failures of the process. Next, the team develops potential solutions. The team works to redesign functions to achieve the strategic vision, ultimately meeting customer service needs more effectively and efficiently. A written plan may be useful at this stage, including estimated costs and benefits of the solutions, as well as schedules, budgets, and other supporting information.

3) Once the plan is complete, management selects a "pilot" area for a trial **implementation**. The progress of the implementation is tracked against the same measurements used to establish the baseline. Future plans for other areas of implementation are adjusted according to the pilot implementation. Improvement efforts can then move out to other areas of the organization, and the cycle repeats, with efforts being linked to each other and to the strategic vision.

4) TQM, as well as many other management programs, emphasizes **continuous improvement** to realize long-term change. The goal is to positively change institutional culture and to foster new attitudes about employee roles, responsibilities, and quality so that improvement and change become the norm.

The phases described above lead to change that is implemented by the employees who are responsible for–and knowledgeable about–the work affected. This is in notable contrast to the autocratically mandated management style of old. Reengineering helps to establish better management processes with integrated controls, enabling upper management to better run their "business" and move closer to achieving the institution's strategic objectives. The resulting improvements truly meet both the institution's and the customers' needs. The overall strategy is to improve on an ongoing basis by giving the employees the analytical tools they need to continually reevaluate their work processes.

Many institutions of higher education are actively working on productivity issues and have adopted variations of these management improvement strategies. Responding to the current environment, colleges and universities are seeking to improve quality and service while simultaneously reducing costs; these institutions are further spurred on by others that have achieved substantial results. A few publicly discussed streamlining initiatives follow.

Boston College

This college has developed a system that measures the unit costs and work flow of internal departments through the use of standardized reports. According to Eileen M. Gaffney, writing in

Planning for Higher Education, "These studies, commissioned by the university's board of trustees, arose out of a concern that Boston College seek the most productive use of its monetary and staffing resources in both academic and administrative environments. They are conducted by a financial analyst who reports directly to the executive vice president of the university and involve considerable interaction with the chairperson/director of the area under review."

University of Michigan

A task force at U. of M. is studying quality in an era of resource constraints. The university seeks to "restrain unnecessary growth of costs and redirect expenditures from areas of low priority to those of higher priority."

Columbia University

Columbia has created the Office of Internal Management Services (IMS). According to the University, the purpose of IMS is to assist "departments in improving their operations, systems and procedures," and has a number of time- and money-saving accomplishments. For instance, IMS developed a microcomputer and peripheral equipment maintenance program that improves service while simultaneously reducing expenditures through the centralization of maintenance via an on-site service firm. The benefits of the program include faster response time, centralized service and billing, on-site storage of parts, increased staff productivity due to shorter machine downtime, and rental income and annual savings of nearly $125,000.[2]

Oregon State University

Faced with major challenges including dissatisfied customers, a lack of resources, and low employee morale, Oregon State decided to investigate whether or not a quality management system might improve the situation. The physical plant department served as the pilot implementation area, with the goal of "decreasing turnaround time in the remodelling process." Solutions implemented through TQM changed the basic structure of the department and shortened the targeted process by 10 percent, a percentage that continues to increase. Success was achieved through the establishment of a customer service center, the creation of the position of project manager, and the adoption of various time-saving methods.[3]

Boston University

This university recently undertook a study aimed at improving student service quality. The task force began by conducting focus sessions with B.U.'s student population. Based on feedback, individual task groups have decided to meet customer expectations by simplifying the registration process, shortening the turnaround time on financial aid information and loan processing, and more effectively communicating information on available services. These focus sessions will help the university respond to student and institutional needs by streamlining the bureaucratic interaction between administration and students.[4]

The observation that Total Quality Management initiatives are becoming more widespread in the education industry is further demonstrated by the results of an informal survey conducted by Oregon State University and summarized in figure 2. This anecdotal evidence provides ample proof of the growing awareness of streamlining and cost reduction opportunities. It also leads back to the central concern of this monograph: As institution managers aggressively redesign administrative functions, they must necessarily address the issue of controls over finance and other operations. Will the redesigned and streamlined functions contain adequate controls? And will the institution, after restructuring or streamlining, "pass muster" in the annual financial audit?

FIGURE 2

Status of TQM in 25 U.S. Colleges and Universities

Institution	Used in administrative areas	Used in academic areas	Used in instruction	Doing research on TQM	Doing TQM consultation	Number of TQM teams operating	Use external consultants/ trainers	Have TQM coordinator	Have TQM "champion"	Use "guru" model	Use other models	Have TQM publications	Have had training
Carnegie Mellon U			X									X	
Chicago, Univ of	X		X	X					X			X	
Colorado State U	X		X			50	X	X	X	X	X	X	X
Columbia U			X										
Delaware Co CC	X	X	X		X	@15	X	X	X	X			X
Florida State U				X			X		X			X	X
Fox Valley Tech	X	X	X	X	X	45	X	X	X	X		X	X
Harvard U			X	X	X	3		X		X	X	X	X
Hawkeye Ins of Tech	X	X	X			8	X	X	X		X	X	X
Illinois Inst of Tech			X	X	X								
Jackson CC				X	X	3							
Lamar CC	X	X					X	X	X				
Michigan, Univ of				X									
Milwaukee Sch of Engin	X	X	X			15–20			X	X	X		
Minnesota, Univ of	X	X	X				X						
North Carolina, Univ of			X										
ND University System	X	X			X	2	X		X	X		X	X
Northwestern U			X										
Oregon State U	X					15	X		X		X	X	X
Palm Beach CC	X		X		X	3	X	X	X		X	X	X
Pepperdine U	X	X	X		X				X		X	X	
Pittsburgh, Univ of			X							X			
St. Augustine Tech Center	X	X	X			4	X	X		X	X		X
Wisconsin, Univ of	X	X		X	X	5	X	X	X	X			X
Wyoming, Univ of	X					9	X		X	X			X

Source: L. Edwin Coate, "TQM on Campus," in *Business Officer 24, no. 5* (November 1990): 27

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To properly answer these questions, one must examine where the controls came from in the first place. People don't plan systems to be inherently inefficient without compelling motives. Historically, pressures from situation-specific problems, regulations, regulators, and auditors resulted in increasing controls, particularly in financial areas. Recently, several highly publicized allegations and proven cases of fraud have created even more pressure on institutions to increase controls. Responding to these pressures, institutions have "layered on" controls–including excessive approvals, duplicate data storage, or the over-division of labor–to provide fail-safe assurance that university policies and procedures are followed to the letter. To correct these situations of expensive administration, many streamlining efforts focus on reducing or eliminating components of these fail-safe control systems. Once these back-up steps and controls are eliminated in the name of faster, more cost-effective processing, an institution must ensure that it has not exposed itself to unintended risks. At first glance, the decision to streamline controls runs counter to the direction that institutions, auditors, and regulators have moved in the past decade.

These two goals, streamlining and controlling, must be reconciled in order to meet the demands of modern business. Universities and colleges can no longer afford expensive administrative systems. At the same time, however, controlling operations and ensuring consistent, accurate delivery of service are still "musts" for effective administration. Therefore, a new paradigm must emerge. New control systems need to be designed to operate effectively in the streamlined business environment, and to provide administrators with the information and integrated controls they need to better manage the institution.

The challenge addressed in this monograph is to create control systems that appropriately assure the accuracy and integrity of financially related transactions and records without either unduly interfering with the work performed or costing more to administer than the benefits derived. Although the theoretical discussion and examples from implementation largely focus on financially related controls, the concepts and the resulting model may be applied equally to compliance or operational controls. The authors analyze the issue of capable and consistent control systems in the remaining five sections as follows:

- Section II explains commonly used, traditional financial control systems and their frequent mutation into bureaucratic nightmares of dubious efficiency or effectiveness.

- Section III looks at a theoretical framework for control systems that emphasizes controlling risk instead of controlling process flows or information.

- Section IV explores the application of this framework to a number of university processes and considers the implications of the suggested control structures on effectiveness, cost, and process management.

- Section V defines critical success factors and develops guidelines for implementing streamlined, risk-sensitive control structures.

- Section VI concludes the monograph and emphasizes key ideas.

II. Traditional Control Structures

The traditional purpose of an internal control structure is to reduce the institution's unintended exposure to business, financial, and accounting risks.[5] Institutions, like all businesses, face a variety of hazards. These include:

- Business risks—such as the demand for, or profitability of, a new academic program; or the risk inherent in building a new research center, the cost of which is to be offset by indirect cost recovery on research grants not yet obtained or not guaranteed into the future.

- Financial risks—such as vesting an individual with the authority to sign checks or the management of cash receipts.

- Accounting risks—such as the risk that miscategorized expenses could be significant enough to materially distort financial statements and skew decisions made from them, or the risk that categorization errors could result in the inclusion of inappropriate expenditures in overhead cost pools for indirect cost recovery.

Looking at the purpose of controls from a different angle, the American Institute of Certified Public Accountants (AICPA) defines internal control (in its Statement of Auditing Standards No. 55) as "the policies and procedures established to provide reasonable assurance that specific entity objectives will be met."

This definition focuses the user positively on the outcomes of an equity's endeavors. The previous definition concentrated on the management of the factors that create or enhance the risk of not achieving business, financial, and accounting objectives. The two interpretations are closely linked, however, because managing the risks of not achieving institutional objectives provides reasonable assurance, to institutional constituencies, that entity objectives will be met. To further tighten the bond between the two, if the institution does not effectively manage the risk that objectives will not be met, there can be no reasonable assurance that objectives will be met.

It is important to understand from the outset that the internal control structure cannot protect the enterprise from all risks; reasonable assurance that objectives will be met does not constitute a blanket guarantee of success. Rather, the internal control structure allows the enterprise to manage the level of exposure to unintended risks. For example, the intended risks to which an institution might expose itself could include the business risk of undertaking a new program or building a new research facility. As a second example, an institution's administrators might realistically accept the financial risk of small losses in cash receipts for the reason that full protection against these losses would be prohibitively expensive. However, if an institution's managers did not consider the risks inherent in a particular function (e.g., check signing) and hence did not control for the risk (by allowing the check

signer access to blank checks and making that person also responsible for bank reconciliations), then the institution is exposed to the unintended risk of the misappropriation of funds.

Traditionally, financial control structures for financial affairs areas have been organized around three elements: the control environment, the accounting system, and the control procedures.

The Control Environment

The control environment is defined as the attitudes, abilities, and actions of personnel (especially at the management level) as they affect the overall operation and control of the college or university.

The control environment represents the collective impact of various factors on the effectiveness of specific policies and procedures. Factors that affect the control environment typically include management philosophy or style, actions by the board of trustees, organizational structure, methods of assigning authority and responsibility, personnel policies, and the control methods used to monitor performance. In addition, appropriate involvement of the audit committee or the internal audit department can contribute to a healthy control environment. In short, the control environment is "the tone at the top" and can significantly influence the maintenance of effective accounting systems and control procedures.

The Accounting System

The accounting system includes the procedures established to identify, classify, record, and analyze an institution's transactions, as well as the documents produced as a result of those procedures.

The overall accounting system can consist of manual and/or computerized components. Specific criteria for an effective accounting system are outlined in figure 3. In general, the procedures and documents help management operate the college or university more effectively by providing accurate and relevant financial information and enable the institution to communicate operating results and financial position to internal and external constituencies.

FIGURE 3
Criteria for an Effective Accounting System

1. **Identify and record *all* authorized transactions**
2. **Record transactions on a timely basis and in sufficient detail for proper classification**
3. **Record the transaction's monetary value in the financial statements**
4. **Determine and record when the transaction actually occurred**
5. **Present the information properly in the financial statements**

Source: O'Reilly, Hirsh, Defliese, Jaenicke, *Montgomery's Auditing*, 11th ed., pp. 191–193.

Control Procedures

Control procedures are the policies and systems that have been established to provide reasonable assurance that the institution's control objectives will be achieved.

To ensure proper control (e.g., assets are safeguarded, managerial policies are followed, reliable information is ereated or compiled) process checks and balances, external oversight, and other administrative governors are built into, or layered onto, work processes. In general, these steps contribute nothing tangibly constructive to the process. They do not, for example, cause invoices to be paid, ledger accounts to be updated, bills to be sent out, and so on. However, such steps do serve to ensure that these activities occur in a manner—and with an outcome—that meets set management objectives. In contrast to the policies and procedures that are part of the control environment and accounting system, which relate to all relevant transactions, control procedures may be established only for high-volume or high-risk classes of transactions. Control procedures can apply to any level of the organization. Historically, procedures fall into broad categories, including proper authorizations, segregation of duties, documentation or record keeping, and independent reviews. The effectiveness of these control procedures is enhanced if they are routinely reviewed.

Control Objectives

The control environment, accounting systems, and control procedures broadly encompass the policies, procedures, methods, and records implemented to achieve four financial affairs control objectives.

Objective 1: Safeguarding assets

Objective 2: Encouraging adherence to managerial policies

Objective 3: Generating appropriate financial transactions, and reliable, timely financial information

Objective 4: Promoting operational efficiency

These four objectives of the traditional control structure of financial affairs areas are, in theory, embedded in each of the structure's elements: the control environment, the accounting system, and the control procedures. Achieving these objectives will support the accuracy, reliability, and efficiency of the execution, compilation, recording, and communication of financial transactions and information. As such these objectives support effective financial management of the institution and should be linked to the institution's basic mission and strategic objectives.

It is not difficult to see how the control structure works to meet the first three of the four control objectives. A few examples of various interrelationships follow.

- Control Environment: The integrity, abilities, and actions of management are directly linked to the organizational culture and the extent that organizational policies are followed. (Objective 2)

- Accounting System: The accounting system is structured to facilitate the timely and accurate execution of financial transactions, such as paying vendors and billing students. (Objective 3)

- Control Procedures: Cash reconciliations and scientific equipment inventory controls help ensure that these valuable and appropriable assets remain at the institution and under the institution's control. (Objective 1)

- Control Procedures: Transaction reviews and authorizations work to ensure that only valid claims against an institution's resources are paid and that all such payments are correctly categorized, analyzed, and reported. (Objectives 1 and 3)

It is significantly less clear how the control structure meets the fourth control objective of promoting operational efficiency. In fact, the control environment, accounting system, and control procedures only indirectly support the fourth objective, though this fourth goal may be the most critical of them all. For instance, at a high level, accurate and timely financial information enables management to analyze the institution's position against internal needs, the requirements of external constituents, its competition in the education industry, and the economy. As such, the control structure can enhance managerial effectiveness and support timely, targeted responses to emerging issues. More narrowly, within a specific department the internal control structure can help promote financial operating efficiency through the reduction or elimination of inappropriate disbursement of funds. These two examples demonstrate how the control structure supports efficient operations and effective administration.

However, the control structure will not promote the operating efficiency of the financial transactions themselves. This is because the control structure does not, in and of itself, support the evaluation of the cost-benefit relationships of controlling; there is no internal mechanism to indicate when controls impede the execution of a transaction or the compilation and communication of relevant financial information. Therefore, the control structure cannot serve as a vehicle or indicator for operational efficiency.

Problems with Control

The objectives and elements of control structures are not inherently inefficient; the implementation and evolution of these structures are different matters. Quite simply, many administrative processes have become well-controlled systems that incidentally provide service. This is a harsh statement, yet this phenomenon appears again and again at well-controlled versus well-run institutions and relates back to the lack of an internal mechanism to ascertain when the cost of control exceeds the value of control. The following are examples of imbalances that may sound familiar to many college and university administrators.

- The buildings and grounds department of a small college in New England has developed procurement practices that would foil almost any effort to defraud the college. However, the process has become so cumbersome that supervisors are spending close to 40 percent of their time on paperwork, and vendor discounts are frequently lost because payment turnaround exceeds ten days.

▪ The process to change personnel information at a major research university provides another instance of an imbalance between control and service. Changing an employee's mailing address requires four signatures and takes as long as three weeks to reach the computer system. In their efforts to control and maintain accurate information, one department after another layered an additional approval onto the records management process.

▪ A prestigious technical university created budget controls over copies that, for many copying orders, cost more to administer than the charged-back amount; in a similar light, another university spent $500,000 per year (costs included salary and operating expenses) to administer and control $1.5 million in accounts payable transactions.

▪ A university with more than $150 million in endowment funds ran a monthly verification of the dividends received through a complex four-way reconciliation of custodial account records, investment managers' statements, general ledger listings of the endowment portfolio, and index card records of each investment. The reconciliation, which took over one worker-week per month (plus the time and cost of maintaining the detail general ledger and index cards) had identified one missed dividend payment (worth less than $10,000) in the past two years.

Education is not alone in this problem:

▪ At one manufacturing company, "it used to take 35,000 transactions a month to account for 3 percent of the total cost." Through "some simple consolidation of routing sequences," the company got the number of transactions down to sixty. As a middle manager commented, "Accounting had to accept the fact that all its transactions were costing the company money and earning nothing." Now, the company spends a lot less time on control but ends up with accurate data. The data are less precise but, overall, more accurate, efficient, and timely, a fact that was proven through improved performance.[6]

▪ Another company, specializing in electrical equipment, handed its new president four manuals of 760 corporate policies and procedures. The president dumped the rule books, and the corresponding emphasis on controls and regulations, in favor of 11 policy statements. So far, the president's mix of communicating, training, and trimming seems to be working. Since 1984, the company has cut its workforce by 17 percent, but increased sales from continuing operations by 37 percent.[7]

▪ When faced with excessive costs, even after significant layoffs, one oil company set out to identify work that did not need to be done. Unnecessary components of the control structure were the first to go. The company junked 25 percent of all internal reports, reduced from twenty to four the number of signatures required on requests for capital expenditures, and compressed from seven months to six weeks the time it took to produce its annual budget.[8]

A common thread runs through each of these examples. Most likely, the control procedure originally addressed one specific need within one isolated department. As the organization grew and became more complex, the control became less effective or no longer met the needs of all departments to which it was applied. To compensate, additional steps or controls were layered on top of the original

process. Over time, the original solution and problem were lost in a complex maze of procedures and paper, ultimately serving no department effectively.

Inefficient control structures, like inefficient functions, decrease the quality of customer service while increasing the cost of operations. As illustrated by the examples above, inefficient controls can actually delay the execution of the function and can increase cost without added value. Obtaining several approvals or requiring additional documentation can unnecessarily complicate a relatively simple process. Likewise, additional steps to record information in various locations, or "shadow systems," can also delay processing. These delays and other excessive controls can increase the cost of the operations— a particularly ironic result given that these controls are often intended to ensure appropriate expenditure of university funds. Finally, ineffective controls also create a bureaucratic operating environment that is difficult to adjust to changing customer needs. The layers of regulation, procedure, and administration create an inflexible inertia within the organization.

The Mandate for Effective Control

Taken together in a time of difficult institutional finances, the double sins of inhibiting customer service and adding unnecessary costs create a mandate to restructure inefficient administrative functions, including their control structures. Inefficiency is at best an expensive luxury in times of plenty, but becomes untenable as profitability declines. For colleges and universities, a more challenging environment (including heightened competition for students, research funds, and philanthropic support) creates constraints on institutional revenues. These constraints mean that institutions must be both effective in the provision of appropriate services and efficient in their delivery.

The next section proposes a response to this mandate by outlining a theoretical framework for improved control structures that helps administrators to more cost-effectively manage and control risk. Although the following framework applies to most procedures and controls, institutions must still consider the level of financial risk associated with the processes. Note that the proposed framework will not always mean reducing controls. In certain instances, such as ensuring compliance with federal regulations, multiple layers of strong control may be justified, especially when large revenue streams may be at risk.

III. A New Paradigm for Control

A rallying cry for transaction process reengineering is, "Stop paving the cow paths! Instead of embedding outdated processes in silicon and software ... obliterate them and start over."[9] As the outdated methods are obliterated and new approaches are developed, the mechanisms by which the process is controlled must necessarily change as well. These business process changes are made within the context of institutional goals, including increasing efficiency, reducing costs, and improving customer service. A less-ballyhooed benefit may be control that is less obtrusive and more efficient than in the past.

In this section, the authors explore a new paradigm for controlling operations (particularly in the financial area), that can guide the creation and implementation of effective control structures in streamlined operating environments. To do this, the authors:

- identify how the driving forces of business (at both a for-profit and nonprofit level) affect control systems, and how these forces have changed;
- reevaluate the traditional purposes and objectives of control in light of these new driving forces; and
- define a model for designing effective control systems that takes into account both the new driving forces in business and the ongoing need for appropriate assurance.

Control Systems and the Business Environment

Control structures should be (and historically were) driven by the business environment. In recent years, the environment has changed, yet many control structures still reflect the historical business processes.

Today's control systems were developed in the 1940s in an entirely different business environment. Business characteristics from this era included:

- a sharply centralized, personalized decision-making structure where authority and knowledge were vested in a single person, often the boss at the top;
- efficiency principles from early industrial America, including fragmented business processes that required each person to perform one, isolated task repeatedly before handing off to the next person in the "office assembly line";

- manual transaction processes and record keeping, where accuracy was dependent entirely upon human factors and the risk of error was very high; and

- a less-educated workforce performing the tasks associated with financial processing.

How did these factors affect processes and controls? Controls were designed to defer all important decision to the upper management by requiring high-level approvals. This hierarchical structure in part compensated for a less-educated workforce and fragmented processes and in part reflected a strongly paternalistic and centralized societal fabric. Control systems made up for highly fragmented processes by having multiple checkpoints in any process. Employees were repeatedly checking everyone else's work. Control structures compensated for highly manual processes (and therefore higher error rates) by having multiple supervisory reviews and approvals, extensive records of transactions, and multiple back-up systems and files for verification and information access.

As times have changed, the business environment has also changed. A few instances of this radical transformation follow.

- Increasing business complexity in many industries has dictated the decentralization of decisions to the appropriate loci of knowledge throughout enterprises, changing the roles, relationships, and communication patterns among the managerial levels.

- High-quality customer service has risen as the primary and explicit concern of enterprises.

- Radically changing information technology has enabled breakthrough approaches to business issues without the former constraints of manual processing speeds and the accompanying linearity, random human error on repeated calculations or transactions, and information access limited by the number of duplicate copies and filing systems.

How have these driving forces of complexity, customer service, and information technology been reflected in business operations? Three examples address the question by way of illustration. First, many multifaceted corporations have delegated product-specific tactical decisions to line management, while focusing top management on policy, strategic direction, and oversight of the enterprise. Second, to enhance customer service through improved product quality, some manufacturers have moved away from age-old assembly line processes in favor of autonomous and accountable product teams. Third, computer-aided design and computer-aided manufacturing systems (CAD/CAM) have radically enhanced industry's ability to produce cost-effective, customized solutions to customer-specific needs (combining both enabling technologies and customer service).

Higher education shares these changes of increasing complexity, a growing concern for customer service, and increased use of information technology. For example, many large universities have migrated to an administrative structure characterized by largely autonomous operating divisions (undergraduate, graduate, and professional institutions; auxiliary operations; hospitals and other "independent" operations) and centralized functions for mission, policy, and resource allocation decisions and for campuswide oversight. Second, to improve customer service in the admissions process, many institutions have adopted a practice of assigning applicants to a counselor who is responsible for the applicant throughout the admissions process and who is ultimately accountable for the conversion of accepted applicants to enrolled students. This clearly parallels the shift to autonomous product teams in industry. Third, several institutions have developed and implemented highly automated registration processes that allow the student to register in advance, by phone, and from the

home, dorm, or any other location served by a touchtone system.

How should a new control model meet the needs of an altered business environment? To develop this new model, it is best to first consider the purposes and objectives of the control structure. From there, it is possible to discuss specifically how the elements of the control structure should address the new business needs.

A Reevaluation

Responding to the changed business environment requires no change in the definition of the purpose of internal control, a slight expansion of the objectives, and substantial rethinking of the implementation of the control elements.

The Purpose

The authors assert that under a new system for control applicable to streamlined administrative processes, the traditional purpose of the control structure remains unchanged. The purpose of the traditional control structure was to safeguard the institution from unintended exposure to business, accounting, and financial risk. Stated differently, the purpose of the internal control system is to provide institutional constituencies with reasonable assurance that specific entity objectives will be met. These concerns are still valid: there has been no economic shift that diminishes the need for this assurance or protection.[10]

Although redesigning controls frequently involves the elimination of familiar and comfortable controls such as inspection and multiple approvals, these stripped-down control systems must still meet the traditional purpose of risk management for the purpose of achieving institutional objectives. In fact, it can be argued that by focusing on risk management instead of process management, these often starkly slimmer and less-obtrusive controls more appropriately meet the purpose for which internal control came about in the first place.

The Objective

To respond to today's business environment, the scope of the control objectives of financial areas must be expanded to encompass the institutional objective of appropriate customer service.

In the contemporary business environment, management still has a need to safeguard assets; encourage adherence to managerial policies; generate appropriate financial transactions, and reliable and timely financial information; and promote operational efficiency. This is consistent with the traditional construction of control objectives.

There is a new objective, however, driven by the business environment and necessarily incorporated into the finance areas for consistency with institutional objectives: appropriate customer service. This means that the objective of the department or area must include a mandate to provide customer service (quality, cost, content, and timeliness) that is in step with institutional goals. The control system must reflect this increasingly important business objective by giving management reasonable assurance that appropriate customer service is being provided.

The Elements of Control

The elements of control—environment, systems, and procedures—must be changed in design, implementation, and maintenance. Changes in these three areas form the specifics of a new model.

As the processing environment shifts from a focus on well-controlled systems that incidentally provide service to customer service operations that are appropriately controlled, the control environ-

ment necessarily changes as well. The customer service orientation of streamlined processes forces a shift in the control emphasis from oversight and end process quality review to less-obstructive, risk-sensitive controls designed to support lower defect-rate processes.

This shift affects low-risk transactions in two ways. First, the "tone at the top" should establish simple, straightforward guidelines for low-risk transactions so that there will be less opportunity for error in the first place. Second, managers should recognize that the expense of controlling directly against the risk of small errors or fraud may be more costly than the financial consequences of small error or fraud. Managers who choose not to control strongly against these risks must admit realistically that some costs due to error or fraud will be acceptable. Of course, indirect controls in the control environment (e.g., management integrity, the communication of ethical values, and managerial compliance with existing policies) still provide powerful disincentives. The other side of the issue is that the savings from reduced processing costs and the increases in customer service from more effective controls will justify the low level of costs incurred from the increased exposure to risk.

The category of "high risk" will also be affected by the shift in control emphasis. First, the category itself will be more clearly defined in term of specific risks and costs. Clearer, more focused definitions may help to reduce the number of transactions labeled as high risk. These transactions will be subjected to the specific type of control, which addresses the particular risk, rather than historical blanket controls.

Understanding and managing financial risk becomes a much stronger element of the control environment as process managers move away from financial accountability at all costs to accountability to customers—meaning high-quality services at appropriate costs. This does not imply that financial accountability is no longer desirable; rather, such accountability is an important aspect of the customer service that is the focus of the organization. Again, the tone from the top must convey to managers that the focus is no longer isolated process and transaction management, but is instead integrated customer service and financial management. From this viewpoint, the primary responsibility is to serve customers and then to balance the service requirements against controlling risks. The environment must promote this attitude in order to allow middle managers to change controls.

In summary, a new model for the control environment now includes an upper-management-led emphasis on customer service and a conscious analysis of risks, costs, and benefits. The control model retains its traditional elements of integrity, ability, and awareness. Employees in financial areas become service and account agents rather than financial transaction processors and recorders.

Financial systems are changing; with their increased sophistication and integration, the frequency and nature of human interaction with individual transactions decreases, changing the ways in which the transactions are controlled. In the past, accounting systems were designed to solely collect and report accounting transactions. Today, comprehensive accounting systems are available that not only collect and report transactions, but also integrate, facilitate, and streamline many of the business processes required to run an institution. In both financial and student information systems, integrated and paperless processing can now be used to reduce manual steps, system-to-system rekeying, and paperwork in a variety of financial and operational transactions (e.g., purchasing from requisition through vendor payment, payroll, and financial aid).

As part of the transformation in automated processing, electronic edits and checks, based on database rules that reflect institutional policies, can replace many of the traditional (and more cumbersome) manual inspections and approvals. Automated systems can also be used to segment the body of transactions by preprogrammed, risk-based criteria. Such systems can route low- and high-risk transactions through different processes that prompt for, and require, different forms of human intervention to proceed. Thus, an important characteristic of the implementation of this element of the control system is that computer systems can take advantage of the capacity of technology to provide integrated, in-process controls and transaction processes that are stratified by risk parameters to

prompt for alternative controls or human intervention as appropriate.

As institutions redesign processes for increased efficiency and customer service, control procedures are evolving away from the traditional control gates of multiple checks, reviews, and authorizations and into more flexible and cost-effective practices characterized by risk-sensitive control procedures that leverage technology and in-process controls. Today's new control systems use risk and cost/benefit analyses to determine the level and nature of appropriate control over transactions, assets, and information. Thus an important aspect of control is the procedure that channels business processes through the appropriate controls. In addition to segmenting business processes by risk levels, the new control procedures are different in that they:

- rely more on decentralized responsibility for, and authority over, transactions;
- employ simpler or more streamlined approval structures, reflecting true authority; and
- are integrated into efficient and streamlined processes that emphasize customer service first and control second.

Note the large overlap between the control elements of the financial system and control procedures. This is the logical result of implementing efficient, in-process controls.

There is a new element to the control structure that has yet to be added: continuous improvement. Just as a Total Quality Management style of managing an enterprise includes an emphasis on continuous improvement (feedback, rethinking, redesigning, and reimplementing), the internal controls of an institution must be monitored, evaluated, and updated to ensure that they continue to meet institutional requirements for control in the context of a dynamic business environment.

A New Paradigm

The paradigm is practical and solidly grounded in new management philosophy. Simply put, effective control systems provide the board of trustees, management, and/or other personnel with reasonable assurance of the achievement of institutional objectives through the cost-justified management of risk. There are four elements in this model that form the criteria for effective control systems in a streamlined operating environment.

- Reasonable assurance–the idea that control systems should not be over- or under-designed to provide higher or lower levels of assurance than management requires to meet the institution's objectives.
- Achievement of institutional objectives–the concept that it is inappropriate to manage departments as well-controlled operations that provide some form of service; rather, good control systems support the immediate customer and, more broadly, the enterprise by helping to ensure that the department meets customer needs. Each department must focus on the institution's objectives, translate these to the specific business objectives for the department, and implement the processes and controls to meet the newly defined objectives.
- Cost-justified–the tenet that the balance between cost and benefit cannot be tipped so that the costs of an institution's control systems are disproportionately large given their benefits.

- Management of risk–the knowledge that controls designed to monitor and manage processes will not necessarily manage exposure to risk effectively. Control procedures need to be focused on the specific risks they are designed to address in order to control exposure to risk with a minimum of interference in the business process. A corollary to this thesis is that more control is not "better" and may be "worse" once a desired level of risk management has been achieved.

IV. Putting the Paradigm to Work: Examples from Practice

In many common university business processes, institutions are redesigning process work flows, approval structures, and the roles and responsibilities of both central and distributed staff in order to maximize customer service and minimize cost. With far fewer steps and layers of control, these systems can still be well-structured and managed to minimize underlying financial risks.

In this section, several case studies are presented that illustrate imbalances among control, cost, and service, and demonstrate the substantial benefits that may be achieved with focused improvement efforts. Each of these case studies is a real-life instance of controls that went awry. In these examples, tighter budgets and increased expectations for service caused particular departments to raise red flags and reengineer the way they conduct business and control financial activities. In every instance, the reevaluation of old control structures was part of the process leading to significant benefits in terms of cost, service, and quality.

Example 1: Procurement at ABC College

The procurement function of many institutions can be streamlined to allow individual departments or employees limited authority to directly purchase items and pay vendors, decreasing the purchasing time lag and costs. This can be done at acceptable levels of risk to the institution.

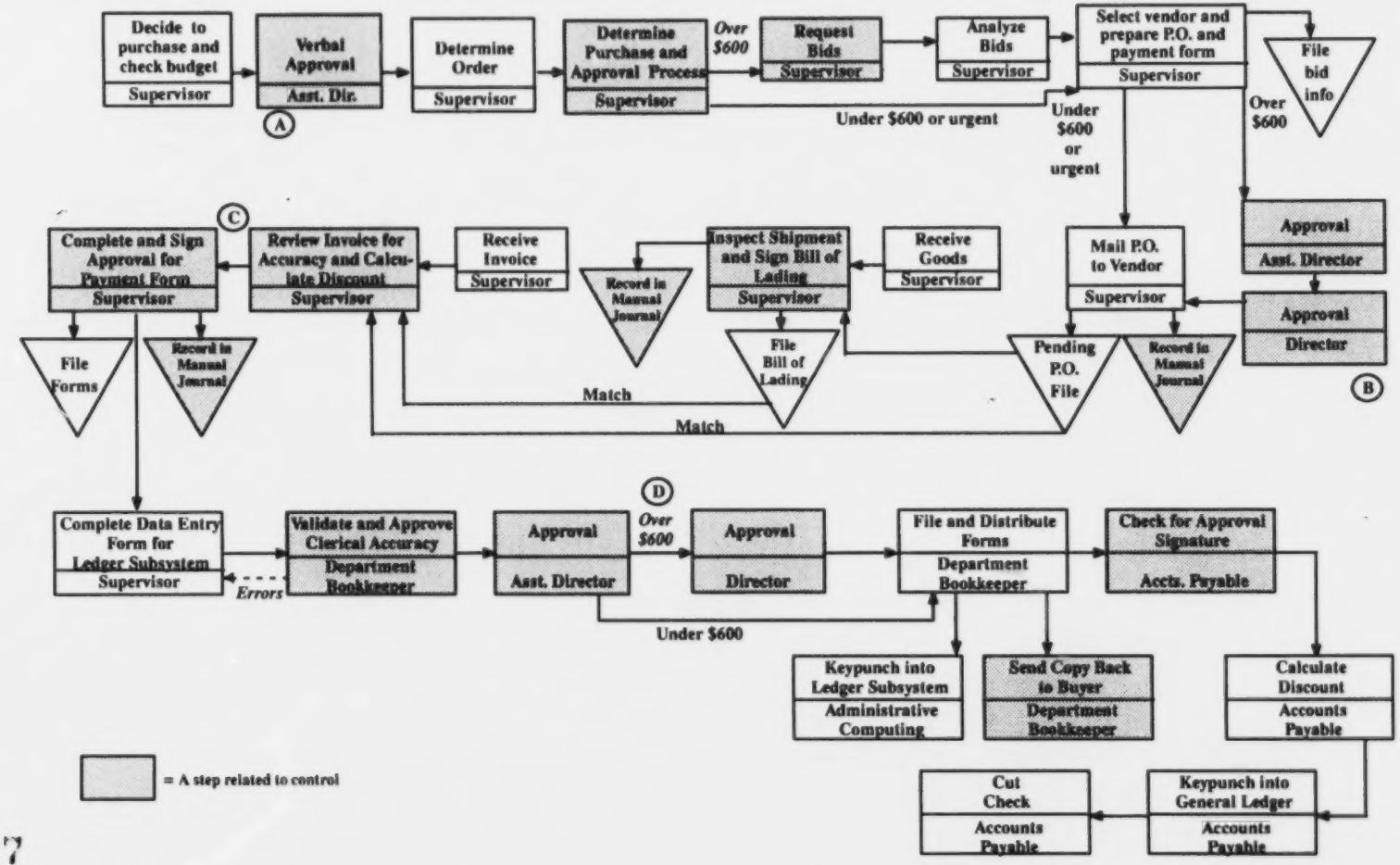
Figure 4 diagrams the procurement and payment processes within the buildings and grounds department at ABC College, a small liberal arts institution. This case study is particularly relevant, as the procedures evolved in response to citings of inadequate control and even fraud in the management letter of the audit report. The resultant process was ridden with controls, as indicated by the shaded boxes.

Before

ABC's procurement process was developed to address the risks of inappropriate purchases and unethical selection of vendors. To control these risks, management set relatively low limits for required competitive proposals, and instituted rigid controls to monitor *both* orders *and* payments. Although this structure certainly thwarted inappropriate expenditures of funds, it also impeded prompt service and created unnecessary work. For example:

- Every transaction above $600 required four complete sets of approvals: two sets for

FIGURE 4
Current Purchasing and Payment Process at ABC College



purchase and two sets for payment. The first "purchase" approval, labelled A, provided immediate, verbal feedback to the overseer. The second (labelled B) approved the purchase, vendor, and account number. For payment, the supervisor approved accuracy of billing and account numbers in the first set of payment approvals, labelled C. In the second set of approvals, labelled D, management *again* approved the supervisor's purchase and choice of account numbers. These approvals provided strict control over each purchase decision and choice of account number, but also forced repeated upper-level management attention to essentially the same transaction.

- As an additional control, a separate form was created to approve payment to vendors. Detailed account numbers and item descriptions were manually transposed from the purchase order to the payment form. The form consolidated all purchasing and accounting information onto one sheet, allowing easy control and review of information and enabling careful surveillance of payments.

- To maintain control over detailed accounting information, buyers were required to calculate vendor discounts (of only 1-3 percent) by hand before forwarding invoices to the controller's office, even though accounts payable automatically calculated the discounts on the computer as part of the data entry. By calculating the discounts in advance, the overseers' accounting records matched the controller reports to the penny, thus ensuring a high degree of precision in information, reconciliation, and budgeting.

- The control that set the minimum dollar limit for required competitive bids was quite low ($600). The result was that fully 20 percent of the processing and control costs were devoted to less than five percent of the dollar volume in purchasing activity. This policy did, however, ensure selection of the lowest cost bidder and reduced the possibility of favoritism or kickbacks.

- Duplicate information was entered and maintained in five different areas: a manual journal, the buyer's files, the financial assistant's files, the ledger subsystem, and the general ledger. These record systems carefully controlled information but did not improve service or accuracy and, in fact, impeded the process flow.

- Furthermore, to accommodate the duplicate filing systems maintained above, separate data entry sheets were used, and again detailed information had to be transposed from one form to another.

- Because of the procedural complexity and controls, almost 100 percent of rejected transactions were rejected for clerical errors rather than true errors in procurement and payment practices. These rejections, of course, delayed processing and created more work for the buyer.

As these examples suggest, ABC's procurement process was not only cumbersome, it was expensive. The processing and control costs (salary) were estimated at $143,000 for the buildings and grounds department, with the majority of dollars spent on low-dollar purchases (see figure 5). In the finance area, an additional $49,000 was spent, again predominantly on low-dollar purchases, to make the vendor payments and record the transactions. Thus, approximately $192,000 was spent to purchase $3 million in supplies.

The irony is that while this control structure regulated every transaction in minute detail, it had one significant weakness. From the vendor's perspective, buyers were authorized to commit $5,000 of the college's funds but were not authorized to approve payment above $600. This policy is analogous to having "tear off" purchase orders with a $5,000 limit. Thus, several weeks after the goods had been delivered and used, the invoice would arrive, and the college would be committed to paying on the approved purchase order. The unapproved invoice, in effect, had gone through the approval process ex post facto. What, therefore, could the director's payment approval truly control?

Figure 5. **Process Performance Statistics of Procurement and Payment at ABC College**

Procurement

Processing Time

Over $600: P.O. (with bids)	1–7¾ hours per
Under $600: P.O. (no bids)	¼–3¾ hours per

Total Processing Costs: $143,000/year

Invoice Payment

Processing Time: ¼–1½ hours per P.O.

Total Processing Costs: $49,000/year

Error/Rejection Rate: 15%

After

Certainly, management still needs to control against inappropriate purchases and unethical selection of vendors. However, the streamlined, proposed process, detailed in figure 6, puts these concerns in the context of managing the overall exposure to financial risk. The process is redesigned to closely monitor purchases of high value and to speed processing of low-dollar, and therefore low-risk, purchases. The improvements were relatively simple (changes in the control structure are summarized in figure 7).

- The dollar limits for required bids were raised, based on economic factors, tempered by comfort levels within the department. The proposal process continues to ensure the selection of the lowest bidder and reduction of favoritism; however, the cumbersome proposal process now focuses on the higher-dollar purchases so that the higher control levels are matched with the increased processing costs. With a new limit of $1,500, only 4 percent of transactions must now undergo the bid process (as compared with 11 percent at the $600 trigger), yet this accounts for 88 percent of the total dollar volume in purchasing activity.

- The dollar limits on approval requirements were also raised. Buyers are now authorized for $1,500, and assistant directors can purchase up to $5,000 on their own signature. With these limits, roughly 74 percent of the dollar volume is still controlled at the director level. Once again, raising approval limits helps to ensure that increased processing costs are dedicated to high-dollar transactions. The approval structure also ensures that appropriate controls are affixed to high-dollar, and therefore higher-risk, purchases. At the same time, service and turnaround time are improved for lower-dollar purchases, as the purchasing authority of supervisors is matched to their responsibility. Supervisors can now purchase

FIGURE 6:
Proposed Purchasing and Payment Process at ABC College

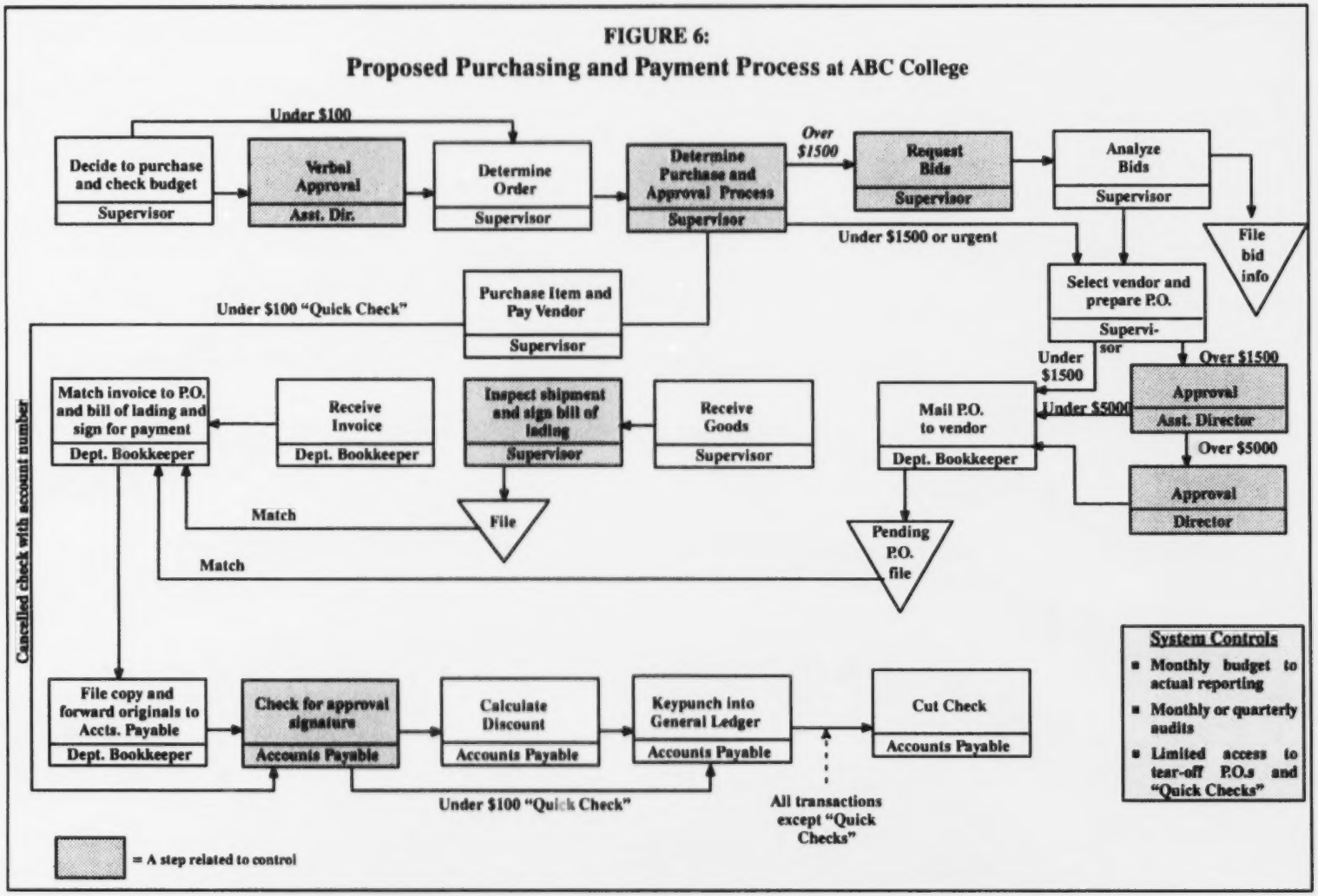


FIGURE 7

Purposes of Various Control Procedures at ABC College

Control Procedure	Current Control Structure: Purpose of the Control Step	Proposed Control Structure: Change from Current and Ongoing Controls
Multiple Approvals	■ Immediate verbal feedback from management ■ Management control over Supervisor purchasing activity ■ Supervisor control over invoice accuracy and account numbers ■ Management control over Supervisor payment activity and account numbers	■ **Raise approval limits** ■ **Eliminate extra approvals** Continue to provide: ■ Immediate verbal feedback from management ■ Management control over purchases of *high dollar items* (over $1,500)
Separate Form for Payment	■ Consolidate purchasing and accounting information ■ Clerical and management review and control of payment activity ■ Control over information	■ **Eliminate** ■ Payment can be approved directly on the invoice ■ Supervisor activity is already controlled in the purchase phase ■ Invoice processing can become a clerical function
Calculating Discounts	■ Control over information ■ Precise accounting, reconciliation, and budgeting (to the penny)	■ **Eliminate** ■ Accounts Payable already calculates discount automatically. ■ Focus on information useful for *management* of budgets, rather than precise accounting data (within 1 to 2% accuracy)
Proposed Requirements	■ Selection of lowest cost bidder ■ Prevention of favoritism	■ **Raise limits** ■ Focus on high dollar activity
Duplicate Data Storage	■ Control over all procurement information ■ Multiple records for various vendor inquiries ■ Multiple audit trails ■ Multiple records for purchasing reference ■ Control over more detailed account number information	■ **Eliminate two file systems** (the manual journal and one of the financial assistants) ■ **Streamline files** (i.e., foremen retain proposal and purchase information but not detailed accounting and processing forms) Continue to provide: ■ Consolidated information for vendor service and problem solving ■ An audit trail ■ Adequate records for purchasing reference ■ More detailed account number information
Quarterly Audits	■ None—relied on outside, annual audit	■ Institute periodic sampling to ensure compliance with a less rigidly, but still adequately controlled system

most of the goods they need to complete their daily jobs without seeking higher-level management approval.

- The approval controls were also changed in a second way. Rather than separately approving both purchase and payment, management approvals are required only when the commitment to buy is made. Once the invoice arrives, approval for payment becomes a clerical function of matching invoices to purchase orders and bills of lading. This structure provides adequate responsibility for each supervisor's high-dollar purchasing activity with one up-front approval. These procedures also eliminate the cumbersome separate form for payment that previously required management approval. Clerical approvals can simply be written directly on the invoice and forwarded to accounts payable. This was the most significant change to ABC's procurement system, because taking the supervisors out of the payment process cut turnaround time in half and substantially reduced the paperwork involved.

- Supervisors are no longer required to calculate vendor discounts, as the "to the penny" precision was unnecessary. Instead, supervisors and managers use more readily available and timely, but less precise, information from accounting; this provides them the accuracy needed to manage overall budgets.

- By transferring the responsibilities of record maintenance, error resolution, and vendor relations to a central clerk, supervisors no longer need to maintain files of detailed purchasing and accounting papers. The responsibility for the detailed information now rests with one individual, which increases consistency and completeness.

- Finally, 46 percent of the invoices are less than $100, representing only 1.2 percent of the total procurement dollars in buildings and grounds. To minimize the processing costs of, and the time consumed by, these high-volume, low-risk transactions, the college instituted a "Quick Check" policy. Each supervisor is periodically given a controlled number of checks that are stamped, "Not to Exceed $100." Carbon copies of the checks, with account numbers written directly on the each check, are forwarded to accounts payable, where checks are verified and keypunched into the general ledger. Additional control is maintained through random audits of transactions on a monthly basis.

In summary, the process was streamlined by identifying the controls that truly added valuable assurance against substantial financial risks, and by eliminating costly blanket controls. The matrix compares the former control structure to the new model. The new structure does not provide equivalent control but instead institutes appropriate control. Rules and regulations over low-dollar but high-volume transactions were minimized. Approval structures were altered to focus management attention on the high-dollar transactions that represent the bulk of the department's spending. Extra forms and filing systems that increased work but added little value were eliminated, and routine processing was transferred from skilled workers to clerical staff with no loss in control. Periodic internal audit reviews of randomly selected transactions and individual supervisor transaction volumes decreased risk of misuse of funds under the Quick Check function. The resulting process allows management to focus on the more sensitive, higher-dollar transactions. Faster processing also gives the benefit of more timely information that is more accurate overall for planning and making decisions.

The changes in the procurement process controls not only enable supervisors to obtain supplies

with little bureaucratic delay but substantially reduce the processing costs as well (see figure 8). Most importantly, for the context of this example, the process remains efficiently controlled. Seventy-four percent of the department expenditures under the proposed structure are controlled at the director level, with another 14 percent of the expenditures managed at the assistant director level. The bid system also ensures appropriate selection of vendors for 88 percent of the department's expenditures. Abuse of low-dollar purchases is administrated through limited access to Quick Checks, monthly budget variance analysis, and periodic random audits of Quick Check purchases. Financial exposure is essentially limited to these low-dollar, high-volume transactions (Quick Checks). Nonetheless, under the proposed structure, the streamlined rules and regulations still mitigate the possibility of abuse without costing ABC more than the control is worth.

Thus the college is able to procure job supplies and process payments more quickly, at lower transaction costs, and at acceptable levels of risk.

FIGURE 8
Overall Improvement Statistics at ABC College

Reduction in procurement processing	
Costs:	26% ($37,000)
Time:	23%
Reduction in payment processing	
Costs:	55%, ($27,000)
Time:	46%

Example 2: Personnel Record Processing at DEF University

This example shows that personnel records can be electronically segmented to provide different types of controls for different transactions within a centralized personnel management system. The personnel/payroll information management function is changing significantly due to the increasing sophistication of technological support. Institutions are reducing the number of approvals required to process information, allowing more on-line access to personnel data, and consolidating human resource information in centralized "people" files. The key to the successful reduction in the control systems inherent in these advances is matching the level and extent of control with the nature of the transaction risk. Timeliness, efficiency, and financial savings may be enhanced with the implementation of well-planned changes.

Before

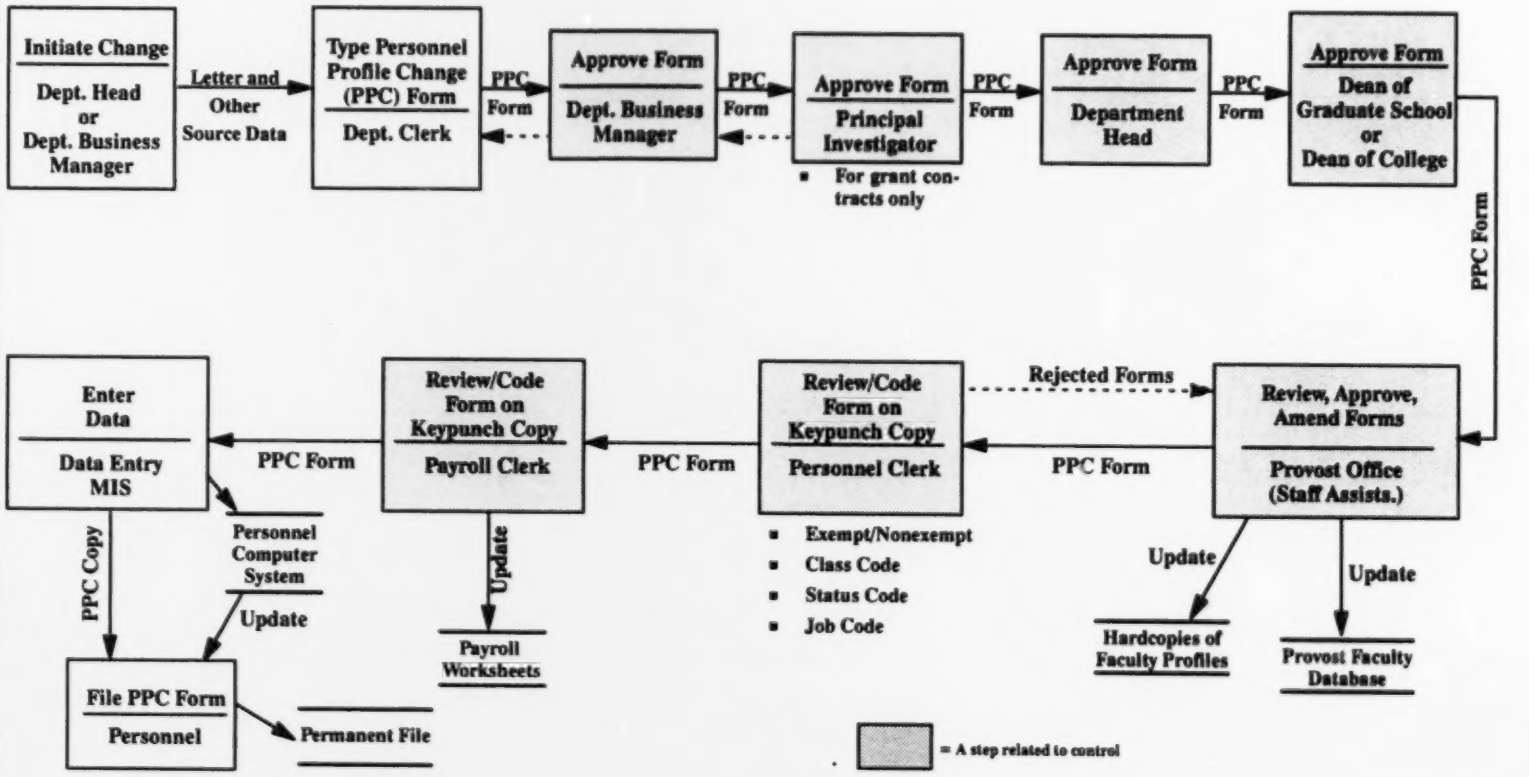
In this example, as depicted in figure 9, the same process and approval requirements were imposed upon every transaction, regardless of the risk to DEF University. The process progressed as follows:

1) In the first shaded box, the department's business manager controlled the information at the source by certifying that the change was indeed appropriate and correct.

2) Then, for grants and contracts, the principal investigator verified the accuracy of charging instructions and salary splits.

FIGURE 9

Current Process to Change Personnel Information at DEF University



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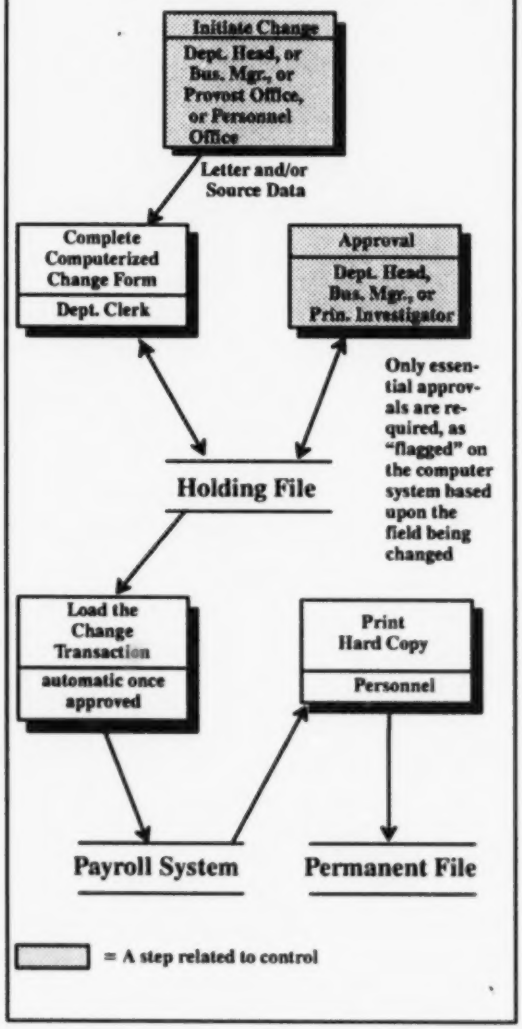
3) The next three steps also approved the information but almost never rejected changes—a clear indicator of an unnecessary control. Except for salary-related changes, these offices were not adding value but instead were simply controlling access to the most recent information (addresses, name changes, etc.) and maintaining costly duplicate information. In fact, the various offices had different understandings of how to correctly complete the form, and often delayed the process by double-checking or second-guessing other offices' work.

4) Finally, in the last two shaded boxes, the personnel and payroll clerks added further controls by again verifying clerical accuracy. They also coded the forms for keypunching.

FIGURE 10
Improved Process to Change Personnel Information at DEF University


Initiate Change
Dept. Head, or Bus. Mgr., or Provost Office, or Personnel Office
Letter and/or Source Data
Complete Computerized Change Form
Dept. Clerk
Approval
Dept. Head, Bus. Mgr., or Prin. Investigator
Only essential approvals are required, as "flagged" on the computer system based upon the field being changed
Holding File
Load the Change Transaction
automatic once approved
Print Hard Copy
Personnel
Payroll System
Permanent File
= A step related to control

Performance of this system was characterized by the following statistics:

- The processing time could add up to as much as two to nine weeks. Among other side effects of this slow method, payroll checks were frequently sent to the wrong address (due to a three week average turnaround time for changing a mailing address).

- Processing costs were approximately $12 per form in labor costs alone, resulting in total processing costs of approximately $200,000 per year in labor.

After

The improved process, as detailed in figure 10, is designed to control sensitive, higher-risk payroll/personnel information (e.g., salaries, new hires, etc.) but maintain routine information at the department level.

First, administrators required all departments to use centralized computer files directly, instead of distributed paper forms and centralized data entry. This change improved efficiency and consistency. The computer provided up-front error checks on the data entry level, increasing accuracy at the source and eliminating the need for the multiple manual checks for

clerical accuracy. Additional control over salary change inputs is provided by the approval process. Coding and mass keypunching are eliminated through on-line data entry, thus reducing the number of people who handle the forms and information and increasing control over entry errors. Controls are still needed to ensure the integrity of the operation of the computer system, as in all other applications of administrative computing.

To develop an approval structure, administrators identified the number of personnel/payroll changes possible, and then the corresponding approvals required. On the computer, a field for each required approval is now "flagged" so that transactions cannot be processed until the entry of all of the appropriate passwords. The approval structure was also changed to a parallel structure, instead of the former serial system, with the result that several administrators can access and approve the transaction at any time without waiting for a previous administrator's approval. This change reduced the lag time associated with a form sitting in an "in" or "out" box in the old system. Read-only access to information in the payroll system is provided to offices previously notified of changes through the manual PPC approval process.

The matrix in figure 11 summarizes the changes to the control structure inherent in the implemented streamlining process. Controls are maintained under the new structure through electronic segmentation and routing of transactions by required approval level. Clerical accuracy in changes to critical fields is enhanced by the elimination of separate coding and keypunching steps through direct entry of data by the originating office. Meaningless controls (e.g., the provost's approval of a change of address) are eliminated, as is the need for information shadow systems.

This example highlights the role technology can play in supporting effective control in a streamlined environment. Here, risk-sensitive in-process controls replace the bureaucratic and obstructive blanket regulations of the previous, largely manual, personnel management system.

Example 3: Student Accounting at GHI College

Often, as processes are computerized, remnants of the old manual control procedures remain intact, inhibiting the efficient use of computerization. Such is the case in this next example.

Before

At GHI College, a small liberal arts institution, antiquated manual control procedures complicated potentially simple computerized financial processes. Over several years, many offices at GHI were able to computerize their student and financial records. Unfortunately, most offices had initiated independent computerization efforts, and thus the individual systems were not properly linked. Paper forms were used to "link" the computer systems.

For instance, in the financial office, student accounting records were maintained on a sophisticated computer system. However, the departments that initiated most of the charges against the student accounts (e.g., housing, dining, and financial aid) had separate, computerized records. Because of the lack of integration, the offices were using the computers to mimic the existing "paper system," leading to a great deal of redundancy. Therefore, the bursar's office, which maintained the official student accounts, insisted upon paper forms for each individual billing transaction, even though most offices had already entered the charge record on computer.

Paper "charge bills" were used to initiate and document every nontuition charge against each student's account. Usually, the bursar's office would receive a computerized list of charges with all the necessary information (name, ID number, account number, and charge description) from another department. Each item on the list then was transcribed by hand onto a charge bill, with one charge bill

FIGURE 11

Control Procedures and Their Purposes

Control Procedure	Current Control Structure: Purpose of the Control Step	Proposed Control Structure: Change from Current and Ongoing Controls
Business Manager Approval	■ Assure change is appropriate ■ Verify accuracy and completeness of information	■ Assure change is appropriate ■ Verify accuracy and completeness of information
Principal Investigator Approval	■ Verify appropriate grant charging instructions	■ **Route through each of these offices only if approval is essential** (i.e., for approval on salary changes or new hires) ■ Electronically flag the fields for required approvals ■ Electronically load the transaction once required approvals are entered with a password ■ Principal Investigator still controls all grant charging instructions ■ These offices no longer need to maintain detailed personnel information in their own offices; updated, non-salary information is available immediately, on-line through desktop terminals
Department Head Approval	■ Track updated information by transferring data from change form to own files ■ Verify agreement on salary information	
Dean's Office Approval	■ Track updated information by transferring data from change form to own files ■ Verify agreement on salary information	
Provost Office Approval	■ Check *clerical* accuracy and completeness of form ■ Track updated information by transferring data from change form to own files ■ Verify agreement on salary information	
Personnel Approval	■ Check *clerical* accuracy and completeness of form ■ Write personnel codes on form in preparation for key-punching	■ **Eliminate** ■ Coding and keypunching are no longer necessary, as the information is entered on-line. ■ The computer checks for errors up-front, eliminating the need for checks on clerical accuracy; additionally the approval process provides a review of clerical accuracy for salary changes and new hire salary data input
Payroll Approval	■ Check *clerical* accuracy and completeness of form ■ Write personnel codes on form in preparation for key-punching	

FIGURE 12

Distribution and Use of Various Copies of Charge Bills at GHI College

Transaction Type	Charge Source	White Copy	Goldenrod Copy	Pink copy	Yellow Copy
Student Status Changes	• Info copied by hand from the Student Information System (SIS) screen	• Used for data entry	• Student permanent file for 4 years	• Temporary file in a desk drawer for easy reference for 1 month	• Not used
Dept. Charges to Individual Students (Parking, Library, Housing, etc.)	• Hard copy stored in dept. records for four years • Computerized list sent to Bursar's Office	• Filed in master charge bill book for 4 years	• Return to originating department • Department then files alphabetically	• Temporary file in a desk drawer for easy reference for 1 month	• Sent to student
Outside Scholarships	• Checks received from scholarship source		• Student permanent file for 4 years	• Scholarship Book for one year	• Sent to Financial Aid Office
Junior Year Abroad Charges	• Information copied by hand from the SIS computer screen			• Temporary file in a desk drawer for easy reference for 1 month	• Sent to Financial Aid Office
Student Health Plan	• Department sends list to Bursar • Files their own list for 7 years			• Health Insurance folder for 4 years	• Sent to parents along with plan brochures and information
Bounced Check Charges	• Bad checks are received by mail from the bank			• Bounced Check folder until cleared • Then placed in student file for 4 years	• Sent to student
Meal Plan Changes	• Change form received from parents			• Filed in Meal Plan folder for 4 years	• Not used
Tuition Refund Insurance	• Completed form received from parents			• Filed in TRI folder for 4 years	• Not used

per student, per transaction. From there, the various copies of the charge bills were distributed or filed.

Figure 12 arrays the various uses and file systems for the charge bills according to each transaction type. The left column lists each transaction type for which the charge bill was used, while the remaining columns identify the use of each carbon copy of the paper form. Overall, this paper-intensive system, dating back to the 1960s, was intended to ensure adequate control over student accounts.

The use of each copy varied according to the transaction type, but, in general, each copy served one of four broad purposes, usually relating to documentation and verification:

- White: Served as a data entry template and then provided a master reference for all completed charge bills. As an audit trail, this copy was stored in numerical order in a master book and was used, although very rarely, for verification in accounting or legal issues.

- Goldenrod: Provided a written receipt of all transactions in each student's permanent file folder. As another, redundant audit trail, this copy of the charge bill was also used for verification, when necessary, for accounting or legal purposes. Although this file system added to control by providing a second audit trail, its primary purpose was to answer questions about particular transactions relating to a certain student. Because the charges were filed by student name, referencing the information related to the specific charge was very simple.

- Pink: Provided an alternate, temporary file system for charge bills, which were filed by transaction type. This file system was also used for verification, and it served the bursar's staff by providing easy "look-up" on the particular month's transactions by type. This file was important for those transactions that came from outside of the college (scholarship checks, bounced checks, parental requests for insurance or meal plan changes, etc.). Once the check was deposited, or the parent's form was forwarded to the appropriate department, the charge bill was the bursar's paper record of the individual transaction.

- Yellow: Notified the student or the originating department of the charge before the monthly invoices were mailed to the parents. This step provided the control of allowing students or the originating department to verify individual transactions before monthly invoices were distributed to parents. This step also provided the service of allowing students to pay bills before their parents were notified.

Once computerization was introduced to the management of student billing and accounting, the paper system became unnecessary, but the old system still lingered. With computerization, each of the copies became obsolete for the following reasons:

- White: The employees perceived that this copy was needed because each transaction had to correspond to an individual piece of paper, the transaction records had to be in a consistent format, and these records had to be stored in one complete file. This view is not accurate according to the principles of internal control discussed earlier: the standardized format and individual records added work, not assurances. To provide adequate documentation for control and verification, the bursar simply needs to store the signed charge authorization lists received from the originating departments. These lists provide an adequate audit trail of complete and accurate original data. Data can be entered directly off of these lists. If there is any dispute over the charges or if the computer system crashes, the charges can be verified

or reestablished from these lists. The individual charge bills are not necessary.

- Goldenrod: With computers, this copy no longer needs to be stored in a student's paper folder. Each student has his or her own "file" on the computer system, and all necessary data can be referenced from this computer file—even more efficiently than by using the paper-jammed student file. Again, if necessary, charges could be re-created by referring to the original charge lists from the departments if the system were to crash. Furthermore, this paper copy is no longer needed to provide necessary service to students. Since all the computerized transactions reference their source, the appropriate original charge list could be pulled out to answer student questions. Thus, institutional responsiveness to student questions was not enhanced by the manual charge bills once the computers were used.

- Pink: Again, this paper file is unnecessary because all data can be referenced on the computer. If the bursar's office still wants to maintain temporary records by transaction type for certain transactions, the individual forms or checks (such as scholarship checks) could be copied or recorded on a monthly log. For example, rather than saving individual copies of charge bills, the office could log all of the month's scholarship checks on one sheet as they are received.

- Yellow: This copy is unnecessary from a control perspective, because students can still verify or dispute charges when they receive their monthly invoice. Students are not limited to disputing charges only from a charge bill. In this particular situation, GHI administrators need to decide whether or not they want to provide students with the opportunity to pay their bills before their parents are notified of any charges. Currently, less than 5 percent of charge bills are paid by students in advance of the monthly invoice, which calls into question the value of the service provided.

After

Upon review of this analysis, GHI decided to eliminate the charge bill system completely. Administrators agreed that the charge bill system was adding unnecessary tasks and layers of redundant control without either adding significantly to customer service or reducing risk in the nontuition student revenue cycle.

Supervisors decided that henceforth, the departmental charge lists will be stamped with a validation number when they are received in the bursar's office. The validation number of the charge will be entered as part of the transaction record, and the charge lists will be filed in numerical order in one master notebook. If there are any questions about a charge, the student record can be called up on the computer; the validation number of the charge can be retrieved; and the original charge can be verified from the list in the notebook.

The next step in this improvement process is to automate the process by linking the various computer systems. Then, for instance, the housing office could simply upload authorized charges from its system into the financial system. The bursar's office could still audit the transactions by pulling the charges up on the computer screen. The paper flow between the offices then becomes unnecessary.

The benefits of these simple changes are considerable. GHI was processing 3,500 charge bills each year (at an annual cost of an estimated $12,500 for compensation and form) at an institution of only 1,200 students. Although this expense may appear low, it is symptomatic of the excessive cross-regulations that existed at the institution. Having such an intensive paper system also created additional work simply to support the system (i.e., the maintenance of multiple, redundant files, shuffling paper

forms back and forth between offices). The tasks associated with the charge bills did not add any value to the process . These tasks and associated costs were eliminated by discontinuing the use of the forms. Three cumbersome file systems were also eliminated: the master charge bill books, the massive student paper files, and the multiple temporary files stored in a top desk drawer. These were replaced by one notebook containing one page per month from each department that originates student charges.

Furthermore, transaction volumes had been steadily increasing, creating an overload situation with existing staffing levels. Over the previous five years, student accounts receivable transactions increased by 48 percent. Over the same time period, other miscellaneous accounts receivable transactions increased by approximately 40 percent. Because the institution is increasing its student population, these numbers were expected to increase even further over the next few years. The current process was no longer sustainable with the existing resources.

The most significant benefit was the positive impact on staff and morale. Staff members had already been cut back as part of the college's across-the-board budget pruning and employees were overworked, logging significant overtime on a consistent basis. These changes actually eliminated work, with the result that employees are now back to regular hours, with less "firefighting," and more proactive planning and analysis. With the shift in work distribution, the new focus of this work group will be reducing the outstanding accounts receivable–thereby improving cash flow–without diminishing the effective control over the revenue cycle.

Example 4: Financial Aid at JKL University

In this instance, it can be seen how the processes of awarding and distributing financial aid can be appropriately segregated and controlled without the multiple systems, rekeying of information, and substantial manual checks and reviews used to control currently fragmented processes.

Before

The financial aid process at large, complex JKL University was highly fragmented, with three completely independent areas controlling various aspects of the process: awarding aid, processing loans, and managing accounting/collections. The process was further complicated by the division of the award function into 14 separate financial aid offices (FAO)—one for each college within the university.

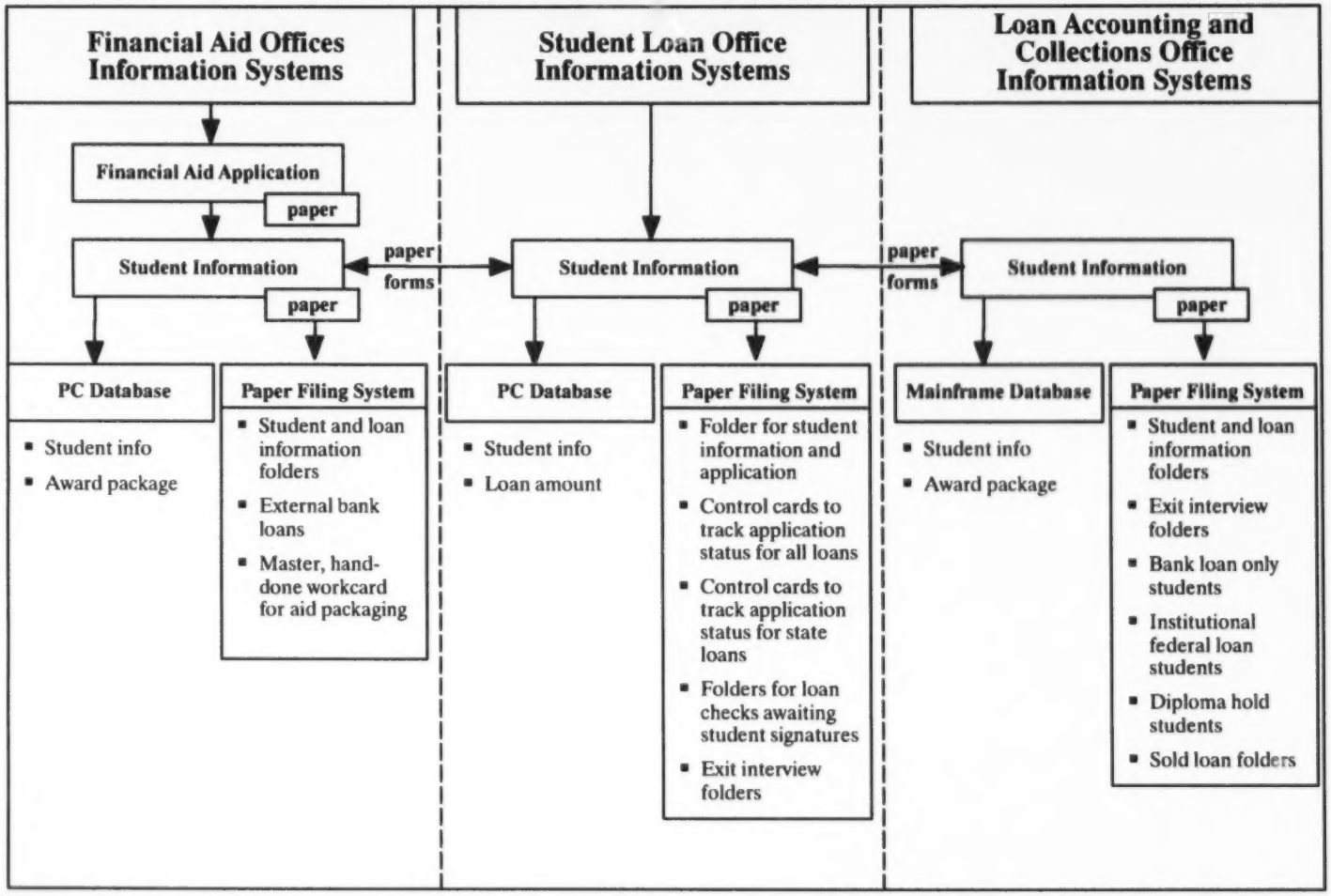
Maintaining and controlling complete and accurate records are integral parts of any office associated with financial aid. These records are critical for continued funding, and work to prevent the tremendous negative publicity that can be associated with allegations of fraud or inappropriate awards.

Figure 13 shows that the three areas controlling financial aid at JKL had completely independent systems for maintaining and controlling this critical information. The diagram conveys the complexity of the manual file systems that evolved over the years. However, it does not readily capture the redundancy inherent to these systems. In each system, for "adequate control," someone had to:

- Review identical student information
- Rekey student information
- Perform batch controls on data entry
- Maintain student information in a database

FIGURE 13

***Current* Financial Aid Data Storage at JKL University**



- Retain hard copy of various forms
- Perform data integrity checks
- Maintain manual indexing system to track various files
- Conduct periodic audits of files

These controls effectively manage financial risk and ensure adequate information to meet federal requirements. The problem is that the controls do not need to be repeated throughout three areas. The university appropriately segregated the duties of award, distribution, and collection, but over time, three separate information systems evolved unnecessarily. The independent data maintenance did not create additional control, only additional work.

With costs for processing one loan ranging from approximately $13 to $52 depending on the type of loan, JKL needed to streamline processing for the 3,600 loans that flowed through its offices each year. Furthermore, the complexity and slowness attendant with processing in three separate software environments resulted in delayed deposits, so that JKL was sacrificing an estimated $100,000 per year in float earnings.

After

When formulating an improved process, JKL identified two critical questions:

- Which components of these data storage systems is truly necessary to manage financial risk?
- How can loan revenues be obtained and deposited faster, without increasing the risk of error or inappropriate awards?

The university recognized that the separate systems actually increased the risk of error or inappropriate awards due to the multiple rekeying of information and the lack of shared files. JKL moved to link the three systems so that the same student financial aid data was accessible to all three offices. Instead of basing computerization on the current, inefficient processes, new processes were built off of the computer technology.

As shown in figure 14, each office still maintains separate student folders for signed legal documents, but most forms are computerized and computer transmitted. Certainly, all tracking is now computerized, and each office has on-line access to determine application status in other areas. Controls and approvals are still tightly maintained, either by computer passwords or by printing out and signing the document in question, which then becomes the signed legal document.

These changes resulted in substantial time and cost savings and also actually increased control and accuracy:

- Processing time was reduced from 3-12 weeks (average of 5 weeks) to just 2 days.
- Float earnings were projected to increase by $96,000, to $138,000 in interest income per year.

FIGURE 14

***Proposed* Financial Aid Data Storage at JKL University**

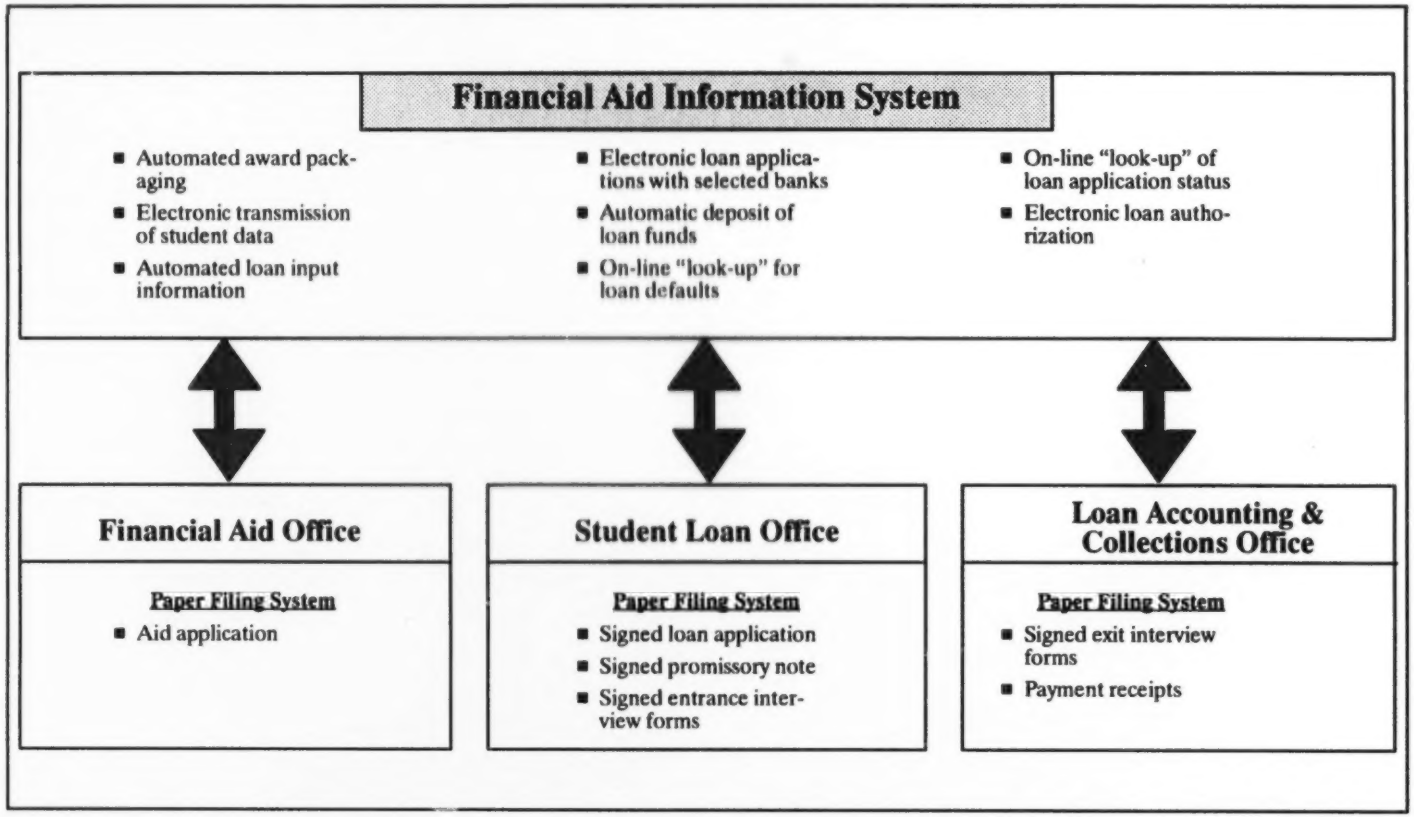
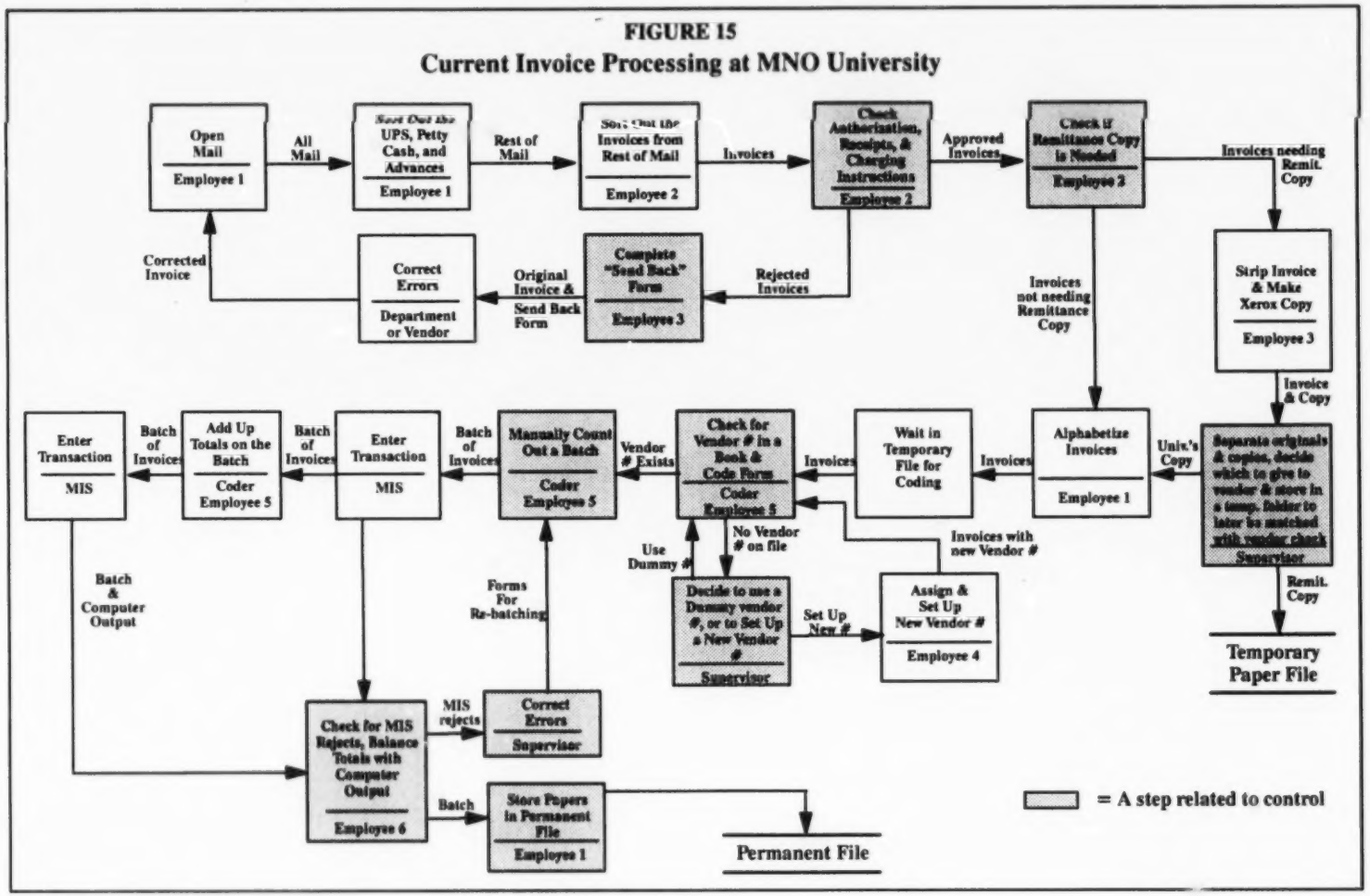


FIGURE 15
Current Invoice Processing at MNO University



- Processing labor costs were reduced from an approximate average of $21 per loan to $13 per loan, resulting in a savings of $30,000 per year.

Although the control each unit exercised over the financial databases decreased, control over information accuracy was enhanced by the reduced redundancy, and cost was decreased.

Example 5: Accounts Payable at MNO University

The case of MNO University proves that high-volume transaction processing can be appropriately controlled without undue segregation of duties at a micro level.

Before

At MNO University, invoice processing within the accounts payable department evolved over time around particular personalities, leading to excessive control, unnecessary approvals, "over-division" of labor, and longer processing times. The process was ripe for streamlining, but due to the financially sensitive nature of accounts payable, adequate control had to be assured.

Figure 15 charts the flow of invoices through the department. The process was fragmented, with up to six different employees handling independent segments of the process and with intermittent supervisory approvals between each segment.

This fragmentation evolved for three control-related reasons:

1. The separation of duties ensured that collusion was required to process inappropriate or fraudulent transactions.

2. Supervisory approval was required for any new vendors or unusual purchases.

3. The supervisor was able to maintain stringent control over each worker's time and assignments.

After

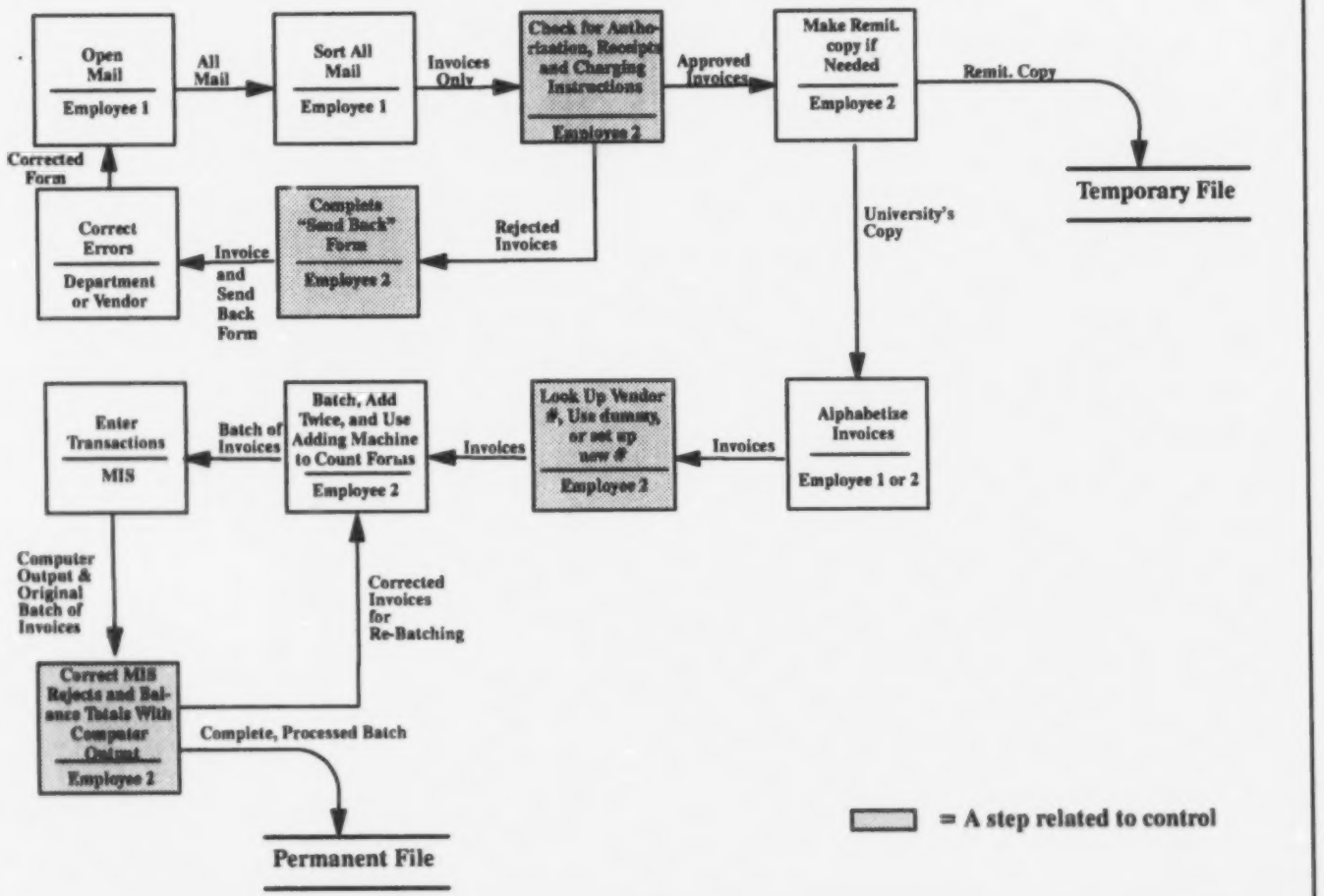
When evaluating MNO's system, the supervisor realized that the third factor was the strongest force in this system. Rather than focusing on financial risk, this system was primarily controlling subordinates' time, which should be unnecessary in a high-volume processing operation. Furthermore, the first factor was unnecessary because segregation of duties was accomplished by separating purchasing from payables. Accounts payable employees are not authorized to purchase anything and cannot physically sign the checks; therefore, the processing within the department does not need to be divided. In fact, the old system actually jeopardized control because only the supervisor had complete process knowledge. If this individual were to leave the university, significant gaps would be left in the operation.

The improved process designates one employee to follow through on the entire transaction. Figure 16 takes the reader through the new and improved process. The following steps were eliminated with no loss of control:

- Sorting the mail twice

- Counting the mail

FIGURE 16
Proposed Invoice Processing at MNO University



- Manually counting a batch before processing

Furthermore, employees were trained and empowered to:

- Reject invoices with incomplete documentation
- Determine the need for remittance copies
- Determine whether or not to create a new vendor number or to use a dummy number
- Correct errors or computer rejections

These simple changes eliminated the many delays associated with employees dependent upon supervisory approval.

Removing the supervisor from the role of "transaction checker" did not compromise control. In fact, it directed processing controls down to the appropriate level and even increased accountability by making one person responsible for the entire transaction.

By focusing on controlling exposure to such risks as unauthorized transactions and incorrect payment amounts or recipients, instead of managing process flows with control gates, MNO's administrators enhanced accountability at the same time that they decreased processing costs.

Example 6: Gift and Pledge Processing at PQR University Hospital

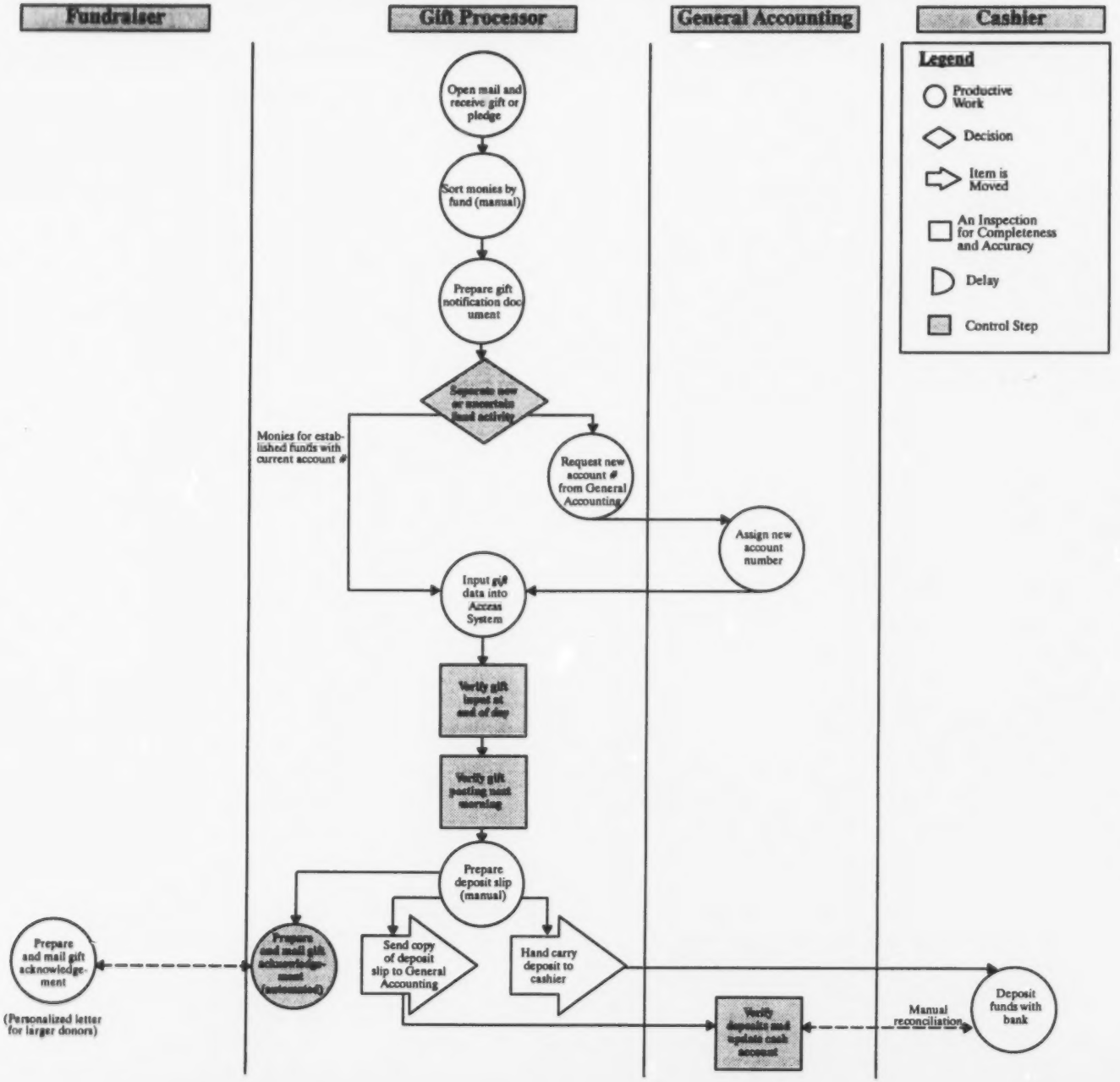
Streamlining is not a panacea for management ills. Indeed, when reviewing administrative systems, institutions must ensure that the basic components of an effective control structure are still in place.

In many cases, particularly within small offices, work flows can be so "people dependent" that several related responsibilities can be assigned to the same employee for matters of convenience. This delegation of responsibilities overlooks the importance of segregation of duties, especially in financial areas.

Before

Figure 17 demonstrates how one individual in the development office of PQR University Hospital was responsible for receipt of gifts, data input, and gift acknowledgment. This is not an acceptable model because duties are not sufficiently segregated. Hypothetically, the gift processor could open a bank account as the new treasurer of "Friends of Cancer Research at PQR Hospital." Then, the gift processor could receive a check in the Development Office, deposit it into the processor's own account, and send an acknowledgment to the donor without ever entering the gift in the Development Office's computer system. PQR would never know that a check had been stolen and would have absolutely no record of even receiving the check. Although the overall project review focused on operational and efficiency improvements in the development area, this gift processing system was not a candidate for streamlining or efficiency initiatives. Although the current system provided fast and efficient gift processing with minimal employee resources, PQR was unable to determine by how much or with what frequency gifts had been diverted.

Figure 17: Current **Gift (and Pledge) Processing at PQR University Hospital**


Fundraiser
Gift Processor
General Accounting
Cashier
Legend
Productive Work
Decision
Item is Moved
An Inspection for Completeness and Accuracy
Delay
Control Step
Open mail and receive gift or pledge
Sort monies by fund (manual)
Prepare gift notification document
Monies for established funds with current account #
Request new account # from General Accounting
Assign new account number
Input gift data into Access System
Verify gift input at end of day
Verify gift posting next morning
Prepare deposit slip (manual)
Prepare and mail gift acknowledgement
(Personalized letter for larger donors)
Send copy of deposit slip to General Accounting
Hand carry deposit to cashier
Verify deposits and update cash account
Manual reconciliation
Deposit funds with bank

After

The improved process is quite simple. Figure 18 compares the previous process with the new process. One gift processor receives the gifts and enters the name and amount onto a deposit slip, which is immediately sent to the cashier. Copies of the checks are then given to a second gift processor for data entry, posting, and acknowledgment. Each batch of transactions is reconciled to the deposit slip, the computerized acknowledgment records, and the bank's records. Separating the receipt and deposit of the gift from the data entry and acknowledgment provides for segregation of duties.

There is still one significant exposure to risk in the proposed model. The gift processor or secretary who receives the donors' checks could, theoretically, divert the funds and then send an acknowledgment on university stationery (not a computer-generated receipt). There are a few ways to eliminate this risk; an institution can use a bank's lock box for receipt (but, certainly, all donors will not necessarily send their checks to the lock box), or can have two employees open the mail together. Given such alternatives, many institutions choose to accept the risk; they must trust one employee who opens the mail.

FIGURE 18

Process Controls

Current

- **No segregation of duties between receipt, posting, acknowledgment, and deposit of funds.**

Proposed

- **Receipt and deposit are separated from posting and acknowledgment.**
- **Collusion is required in order to divert funds.**

V. Implementing (and Reimplementing) Effective, Streamlined Control Procedures

Transforming a department's or institution's control structures cannot be a one-time, fragmented effort. An effective system requires the continual rethinking of entire processes and policies, on an all-inclusive basis.

Improvement efforts cannot focus simply on the control structures; it is a must to consider the entire process. Therefore, when groups work to redesign control structures, they are actually redefining the way in which they conduct business: the processes and policies.

The process for change follows the basic rules for streamlining that were outlined in the introductory section of this monograph. As discussed, process redesign initiatives include four fundamental steps, or phases: baseline, planning, pilot/implementation, and continuous improvement. This paradigm for cost-effective control in no way changes the focus of streamlining efforts on cost, customer service, and quality. However, there is a new ingredient: managers must customize the streamlining process to introduce the dimension of ensuring adequate control. For improvements in financial areas, administrators must define the critical success factors (defined in the "vision" of the planning phase) so that quality is interpreted as effectively meeting the control objectives previously outlined in Sections II and III. These control objectives consist of safeguarding assets, encouraging adherence to managerial policies, generating reliable financial transactions and information, and promoting operational efficiency.

In each of the four phases, several factors will focus the improvement team so that their efforts will lead to both adequate control and operational efficiency. In this section, the authors outline the critical factors that the team must address while designing and implementing new control structures in financial areas. For each of the four fundamental steps, the basic tenets for streamlining efforts are summarized. Following this is a list of critical questions within each phase that can help an improvement team evaluate their efficiency ideas with respect to financial control.

Baseline Phase

Once a particular area has been targeted for improvement, the baseline phase usually focuses on documenting and "measuring" the current process(es). Quantifying the process(es) helps the entire

team to understand exactly how the current system works and to objectively highlight bottlenecks or opportunities for improvement. Measurements would include statistics such as forms processed per minute, transaction turnaround time, or processing cost per transaction. This focus on measurement and administrative efficiency may at first seem only remotely related to improving control structures. However, this type of a baseline assessment supports the redesign of the entire transaction process. To gain efficiency, planners must develop an objective assessment of the entire process, both from an operational and a control perspective. These types of measurements and the basic objectives of the baseline phase are absolutely critical for truly "breakthrough" improvements.

To incorporate concerns about control, it is essential to develop the baseline assessment of the control functions in the current process(es). The various controls in the current system do serve specific purposes. Before simply eliminating unnecessary steps, the improvement team must identify what the control needs were in the old process and then use these as a foundation to ensure that customers' control needs are still met. The following questions can help address these issues:

- What are the business, financial, and accounting risks inherent in the area under review?

- Why does each particular control exist in the current process? Whether it is an additional approval, an extra division in labor, or any other kind of control, what exactly is the control's purpose?

- Is this particular control addressing a specific risk or simply controlling transaction processing?

- Does the control link accountability to authority and responsibility for the financial transaction or process?

- Does the control impede customer service? If so, is this loss in service justified by the corresponding level of financial risk that must be controlled?

- Is the control unique, or redundant?

- If the output of a process is a report, how is each report used? Often, controls exist to ensure the integrity of data, and the data are then shared with "everyone" via a series of reports. Are the reports truly necessary? How exactly are the data used in the current environment? Does the institution need to generate these data in the first place?

Planning Phase

In the planning phase, the team identifies customer needs (both operational and control needs; both internal and external customers), compares them to the baseline of the current process, and then evaluates the gaps between customer needs and current process outputs. A key objective of this phase is to plan improvements to close any gaps and to meet customer expectations. Once again, the team can ensure control issues are sufficiently addressed in these plans by considering questions such as the following:

- What level or type of control is necessary to manage financial risk? What is it that the customers want controlled? How sensitive is the institution to the business, financial, and accounting risks inherent in the area under review?

- Does the redesigned control structure still meet the purposes and objectives of traditional control structures after adapting new processes to the modern business environment? For instance, does the accounting system still meet the criteria identified in figure 3? For high-risk transactions, does the institution still segregate duties where necessary, require upper-level authorizations, or conduct random audits to ensure adequate control?

- Does the plan address the costs and benefits of implementing specific control elements? Is the control not only necessary but also financially prudent?

- Is additional control justified because of unusually large revenue streams or other risk factors? Are there other factors that could justify additional controls, such as the risk of exposure to bad publicity or the risk of jeopardizing a particularly large alumni donation?

- Does the plan truly take advantage of the capabilities of technology? Could an alternate approach eliminate whole segments of processes and controls by relying on in-process edits and checks? When a control inserts manual intervention into a process, is it really necessary? How may the institution more effectively integrate different computer systems to eliminate the need for duplicate work or controls?

- Are all key customers included in the process? Is management meeting the control needs of each customer?

These questions can be used as tools not only for ensuring adequate control but also for pushing efficiency efforts higher by questioning the need for certain controls and eliminating unnecessary ones. Questions such as these should help the team define control needs and then rigorously challenge old ways of doing business, breaking out of fossilized, established "routines."

Pilot/Implementation Phase

This phase proceeds in two parts. First a "trial" area is selected for implementation, and plans are tested. Once the quirks are worked out of the process, implementation moves into other areas. The idea is to learn from experience in a test area (or two) before uprooting the entire system.

Certainly, this phase is critical for testing changes in control structures. As unnecessary controls and redundant back-up systems are eliminated, changes are sure to backfire once in a while. Effective communication becomes pivotal as control issues are tested and negotiated. Group meetings of key players should specifically address any lapses in control and options for any necessary back-up systems. As lapses in control occur, the group should consider the following questions, and then refer back to questions in the baselining and planning phases to develop solutions.

- Why exactly did the lapse in control occur?

- Is the lapse significant? Does the incident justify change or does it fall within the

boundaries of the cost-benefit analysis? Can the institution afford another incident similar to this one?

- With what specific control issue is the customer–who received the service and presumably identified the lapse in control–concerned? What other options does the institution have to attempt to satisfy this customer's need for a particular type of information or control?

- Have the results in the pilot area been thoroughly examined? Has the team verified that the customer's control needs have actually been met?

Continuous Improvement

Continuous improvement asks that the work group constantly reevaluate the business environment and adapt its processes to meet changing customer needs. Particularly in financial areas, an external factor will often influence the department's activities. For instance, a new regulation or a different senior administrator might require that new or different information be maintained by the department.

Rather than simply layering on another task or control, the process should be reevaluated to meet the new demands. As invoked in *Excellence in Government: Total Quality Management in the 1990s*, "Go back to assessment and planning, introduce higher levels of TQM, and continue to build your capabilities. [Improvement is] a journey not a destination."[11]

When facing new requests for control or for information, go back to the same critical questions identified in the baselining and planning phases.

The overall goal is to prevent the layering on of controls, a process that has become all too common over the past few decades. Institutions can no longer afford the luxury of being over-controlled. Figuring out what is really needed to manage exposure to risk and meet customer expectations is a continuous process with the clear rewards of elimination of extra or meaningless controls (as well as extra work!), and ongoing assurance of the appropriateness of the control structure.

VI. Conclusions

With so much attention focused on the twin goals of efficiency and effectiveness over the past few years, it is ironic that so little study has been directed to the efficiency of control structures. The nature of controls has changed only slightly over the course of several decades. One of the subtleties in designing a new model for control is that the fundamental theories of control are, in fact, constant—higher education, like all business, employs control systems to manage exposure to unintended business, financial, and accounting risks. Higher education still has the same control purposes and objectives that it did half a century ago.

However, if implementation is separated from the theoretical framework of the purposes of control structures, then one may see radical change, and it is in the implementation of control objectives where a new model is desperately needed in modern higher education administration. In this monograph, the authors have applied the theoretical framework of traditional control structures to a new business environment and to an evolving processing environment. The following driving forces in each of these two arenas give shape to the new model:

- Business operations must be flexible, agile, and service oriented

- Processing systems must leverage the full capabilities of modern technology and a more educated, capable, and empowered workforce

These factors lead to a remarkable shift in the theoretical framework of the implementation of controls. In keeping with the philosophy of the new system, management should no longer attempt to control processes but should focus on controlling exposure to risk. Doing this places new demands on managers to reevaluate and quantify both the risk inherent in a certain process and the overall risk sensitivity within the institution.

Controls that are part of the process, rather than being external oversight at the end of a process, can still provide fully appropriate levels of control. Controls can now be designed to "channel" transactions through differing levels of scrutiny based on risk. In the past, managers depended on "gates" placed throughout a cycle, interrupting the flow for manual intervention. Processes no longer have to be controlled by omnipresent "yes or no" checks. With technology and cost-benefit analyses, planners can choose to use varying levels of control and to take calculated risks.

Finally, will controls designed for a streamlined environment still pass muster in the annual audit? If such controls are designed to meet the traditional purposes and objectives, and if they meet the institution's customer and environmental needs, the answer is a resounding "yes."

Notes

1. Coopers & Lybrand, *Institutional Cost and Quality Management* (ICQM), 1991.
2. Office of Internal Management Services (IMS) within the Office of the Deputy Vice President for Administrative Services, Columbia University in the City of New York.
3. L. Edwin Coate, "TQM on Campus," in *Business Officer 24, no.5* (November 1990): 30.
4. Internal client records, 1991, Coopers & Lybrand, used with permission.
5. This chapter draws heavily *Montgomery's Auditing*, specifically chapter 7, "The Internal Control Structure." The authors have broadened and adjusted the definitions so that the definitions apply more readily to both the management and reporting of financial events in higher education.
Vincent M. O'Reilly, M. B. Hirsch, P. L. Defliese, and H. R. Jaenicke, *Montgomery's Auditing*, 11th ed. (New York: John Wiley & Sons, 1990).
6. J. William Semich, "Accounting for Quality," in *Purchasing* (January 19, 1989):74-79.
7. Ronald Henkoff, "Cost Cutting: How To Do It Right," *Fortune* (April 9, 1990):40-49.
8. Ronald Henkoff, "Cost Cutting: How To Do It Right," *Fortune* (April 9, 1990):40-49.
9. Michael Hammer, "Reengineering Work: Don't Automate, Obliterate," *Harvard Business Review* (July-August 1990): 104.
10. A major study of internal controls undertaken on behalf of the Committee of Sponsoring Organizations of the Treadway Commission has proposed a new definition of internal control:

> Internal Control is a process, effected by an entity's board of directors, management and other personnel, which is designed to provide reasonable assurance regarding the achievement of objectives in one or more categories:
>
> --effectiveness and efficiency of operations
> --reliability of financial information
> --compliance with applicable laws and regulations

There is a strong similarity between the purpose of controls used for this monograph and the definition from the study quoted above. The monograph focuses on the effectiveness and efficiency of finance-related operations and the reliability of financial information.
Coopers & Lybrand, "Framework," in *Internal Control–Integrated Framework* (Committee of Sponsoring Organizations of the Treadway Commission, Revised Draft, February 1992): p.9.
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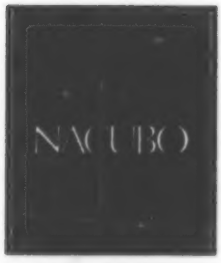

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